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Entertainment Industrialised

The Emergence of the International Film Industry, 1890–1940

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Gerben Bakker

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Entertainment Industrialised

Entertainment Industrialised is the first study to compare the emergence and economic development of the film industry in Britain, France and the United States between 1890 and 1940. Gerben Bakker investigates the commercialisation and industrialisation of live entertainment in the nineteenth century and analyses the subsequent arrival of motion pictures, revealing that their emergence triggered a process of incessant creative destruction, development and productivity growth that continues in the entertainment industry today. He argues that cinema industrialised live entertainment by automating it, standardising it and making it tradeable, a process that was largely demand led, and that a quality race between firms changed the structure of the international entertainment market. While a hundred years ago, European enterprises were supplying half of all films shown in the US, the quality race resulted in today's industry, in which a handful of American companies dominate the global entertainment business.

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To my parents

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London, October 2006

Prologue

> The real voyage of discovery consists not of finding new lands, but of seeing the territory with new eyes.
>
> Marcel Proust

When Charlie Chaplin was nineteen years old he appeared in three music halls a night. On one fine day he started in the late afternoon at the half-empty Streatham Empire in London. Directly after the show he and his company were rushed by private bus to the Canterbury Music Hall and then on to the Tivoli. This constituted the maximum number of venues an entertainer could visit on an evening, and thus the inherent limit to a performer's productivity.

Yet, barely five years had passed before Chaplin would appear in thousands of venues across the world at the same time. His productivity had increased almost unimaginably. Most of this efficiency jump translated into lower prices, far lower than ticket prices for music hall. Chaplin himself, therefore, was able to capture only a small percentage of revenues. Yet this tiny cut made him the world's highest-paid performer.

Chaplin's experience epitomises the massive increase in productivity that modern service technologies have made possible. These efficiency gains often came as thieves in the night. They went largely unmeasured because inputs such as labour or capital have been used as output proxies. In addition, sharply falling prices kept expenditure shares modest, even as quantities skyrocketed.

The entertainment industry today is orders of magnitude larger than in Chaplin's time. It has become one gigantic tube of plenty and a fountain of wealth and pleasure. Nearly everyone consumes electronic entertainment in some form. Performances are reproduced almost infinitely, at no cost. Actors travel at the speed of light on electromagnetic waves. Performers from distant countries compete for the attention of the same audience at the same time. We now consume far more entertainment than we ever did and we pay far less. It has become a mass experience. We habitually assume that our peers have seen the same

television programmes and films as we have, and that they know what we are talking about when we refer to them. And yet, despite all this technological and economic might, live entertainment has not died out, but is still performed in many cities and enjoyed perhaps by more persons than ever before. We appear to live in a world taken out of a science fiction novel, in which hyperdrive technology goes hand in hand with technologies thousands of years old.

The funny thing is that we take all this for granted. We find it the most mundane thing in the world that we can hear a band from Seattle playing when we switch on the radio in London in the morning. We find it absolutely self-evident that we can consume ten films and television programmes a week. And we do not think it at all strange that one evening we watch a soap or game show on television, and another we find ourselves in an old-fashioned theatre looking at persons moving and talking on a platform in front of us.

This book is about how we got here. It is an attempt to identify underlying economic mechanisms and regularities that can explain the origins and evolution of the modern entertainment industry. It investigates how motion pictures emerged from a world of traditional live entertainment, and how this emergence set in motion a continuous process of creative destruction, development and productivity growth that is still going on in the entertainment industry today.

Three main themes run through the book: how motion pictures industrialised spectator entertainment, how a quality race between firms changed the structure of the international entertainment market, and what effect this had on economic and productivity growth. The investigation has led to seven claims. First, cinema industrialised live entertainment by automating it, standardising it and making it tradeable. Second, this industrialisation process was largely demand-led. Third, it was the index case for the industrialisation of other services that would follow. Fourth, in a process of dynamic product differentiation old formats were not competed away, but often reinvented themselves when new formats arrived: theatre changed after vaudeville, vaudeville changed after cinema, and motion pictures changed after television. Fifth, the tradeability of motion pictures integrated national entertainment markets into an international one. Sixth, a quality race in which firms escalated their costs sunk in film production and marketing, triggered in the 1910s, led to the emergence of feature films as we know them now. It is still going on today. The race resulted in a handful of American companies dominating the entertainment business, as well as in the industry's geographical concentration in the US, and later specifically southern California. Last but not least, although the Hollywood studios have won

the race, American consumers lost it. Their European counterparts enjoyed a far greater variety of both live and filmed entertainment, and consumed lots of exotic pictures next to the standard Hollywood fare.

These claims are intertwined with several other noteworthy findings. First, the emergence of cinema was preceded by rapid growth in the live entertainment business. Second, around the turn of the century, elasticity of demand at prices lower than the lowest existing ones was extremely high, and this was initially not well known; it was waiting to be discovered by entrepreneurs. Third, eventually the process of discovering audience tastes was industrialised through modern market research techniques introduced to the film industry by George Gallup. Fourth, motion pictures were an 'inferior' good in Europe (people spent proportionally less on them as their income increased) but a 'superior' good in the United States, and live entertainment was slightly superior in Europe and very superior in the US. European consumers spent more of their income on entertainment and considered it far more a basic necessity than their American counterparts. These transatlantic differences in consumption could be explained largely by diverging tastes, while intra-European differences were caused more by variations in relative prices. Fifth, because of the necessary threshold ticket-selling capacity, some films could not be sold to cinemas at any price, which complicated the competitive process and new entry. Finally, Hollywood did not have a manifest destiny as the centre of world film production. Until the mid-1910s European firms were superior, and until the late 1920s locations such as New Jersey and Florida were competing with Hollywood to become the main film production site. The 'iron law of Hollywood dominance' postulated by some is no more than a folk tale.

The book is structured as follows: the introduction sets out the theme in detail and positions it within our present state of knowledge. Part I largely focuses on the world of commercialised live entertainment from which cinema emerged. Part II focuses on the rise of film from the world analysed in Part I, while Part III investigates how cinema has industrialised spectator entertainment, examines the impact on overall economic growth and how this extends to other industries.

After you have read this book, you will know how cinema industrialised entertainment, why most commercial films come from Hollywood rather than Madrid, Nice or Naples, how much richer motion pictures have made us as a society – and much, much more. If the book has succeeded in its aim you will see entertainment with new eyes. Perhaps you will even be left with an analytical framework to explore the industrialisation of other services.

Hold on, because it will be an eventful voyage.

1 Introduction

Motion pictures constituted the first major form of industrialised mass entertainment. Soon after their commercial introduction, they were shown in most, if not all, cities in the Western world and beyond. Motion picture technology originated in the era of the second industrial revolution, when important innovations appeared that were adopted almost universally, such as electricity, synthetic chemicals and the combustion engine. Once motion pictures had firmly established themselves, from the 1910s onwards, cinemas sold billions of tickets each year. Those who did not go to see a film regularly became a minority. Some anecdotal figures show that, in economic respects, the movies were not insignificant. In terms of exports, for example, they were the fourth largest export earner in Italy before the First World War.[1] In terms of profit, they were the tenth most profitable business in the US during the Depression.[2] In terms of growth, they were the fastest growing French industry in the 1930s.[3] In terms of consumption, they became the main leisure expenditure, selling almost one billion tickets a year in Britain.[4] Almost everyone, dumb or smart, rich or poor, male or female, town or country was going to the pictures. So in a few nations moving images had been a large export earner, in many a large net importer, but in most they constituted a new growth industry, a fountain of profits and the name of recreation.[5]

This book is an open-ended investigation into the emergence of this fascinating industry that merged technological innovation with creative and artistic experimentation. It examines how this business evolved from nineteenth-century live entertainment, how it both responded and

[1] This commercial prosperity was relatively short lived. The Italian film industry never recovered from the crisis it underwent after the First World War (Hayler 1925: 153).
[2] Profit on invested capital was 10.63%; and, for comparison, in oil refineries 10.67%, steel producers 7.53%, department stores 6.37%, chain grocery and food 5.94%. These figures concern listed corporations from the Securities and Exchange Commission surveys (Huettig 1944: 110).
[3] Sauvy (1984: 152, 318). [4] Rowson (1936).
[5] In this book 'film industry' refers to production as well as distribution and retail.

contributed to wider changes in consumption patterns and production structures, how its development fitted into a broader process of sectoral change, how it became highly concentrated and what productive impact it had on the economy at large.

The main argument is that during the second industrial revolution falling working hours, rising disposable income, increasing urbanisation, expanding transport networks and strong population growth resulted in a sharp increase in the demand for entertainment. This demand was met by a surge in the quantity and variety of live entertainment supplied, facilitated by process innovations such as steel-frame theatres, railway-routed actors and telegraphic booking. Large cities would offer a cascade of entertainment at staggered prices and qualities, including opera, concerts, theatre, vaudeville, variety, music hall, circuses and burlesque. By the turn of the nineteenth century, the production possibilities of this maturing industry configuration had been exhausted. Further innovations could only increase productivity incrementally.

At that point, a few smart entrepreneurs developed motion picture technology from a gadget, a trick, a novelty shown at fairs, into the motor of a new, well-organised and highly concentrated industry, eventually pushing live entertainment to the margins. Companies adopted the technology as a radical product innovation that made up for the decreasing returns from further process innovations and switched the industry onto a path of higher productivity growth.

Motion pictures industrialised spectator entertainment by automating it, standardising its quality and transforming it into a tradeable product. They merged the freshly integrated national entertainment markets into an international one. Performers from countries far away from each other now started to compete for the audience's attention, no longer in one particular city or country where they happened to be, but in every city, every town, every village, every hamlet that could support a show – and even more so in places that previously could not.

Initially film production spread out over the Western world. Expansive European producers, for example, at times served half the American market. During the late 1910s, however, industrial concentration increased and was followed by the geographical concentration of production in Southern California. It will be shown that this shift was a consequence of the industrialisation and market integration processes mentioned above, and of the key economic characteristics of film production costs – their endogeneity and sunkness – combined with an unfortunate historical circumstance – the First World War.

The above research agenda addresses the three major narrative themes of economic history: the transition to a market society or market

integration, the development of technology and productive forces, and the occurrence and extension of industrialisation in a pre-industrial world.[6] A long tradition exists that has explored these themes for agriculture and manufacturing. The current research attempts to extend them to services, by examining one specific industry that was the index case of their industrialisation.[7] The investigation's comparative structure may also add a new, more tertiary perspective to the debate on European–American productivity differences in manufacturing.[8] In addition the study contributes to our insight into a class of industries defined by high endogenous sunk outlays and protected by intellectual property rights such as trademarks, copyrights and patents.[9]

The starting point for this investigation lies far before the emergence of cinema itself. It is the moment when live entertainment became liberalised. Together with other factors, as we shall see, liberalisation enabled the development of a modern, commercial industry. This took place mainly during the nineteenth century, although far earlier in the US than in Britain and France. The largest part of the investigation then focuses on the time between the emergence of cinema in the 1890s and the eve of the Second World War. The study ends there because in this period motion pictures became the predominant form of mass entertainment. Television would only rear its tube in the late 1940s. Phonographs and radio served largely different markets: while competing heavily with each other, they provided little challenge to cinema. The former became widespread, but remained a somewhat elite product that could be found in at most a third of all households and would only become a true mass medium in the 1950s. Radio diffused rapidly and reached its height during the 1940s.[10]

A comparative approach will be used, because this increases confidence in our findings, highlights commonalities and differences between countries and facilitates the study of international market integration. Three countries are examined: France, Britain and the United States. France because in the early years its entrepreneurs were most successful

[6] See, for example, Epstein (2000).

[7] The term industrialisation of services has been coined before, by Levitt (1976, 1983), for example, although in a slightly different context.

[8] A good overview is Broadberry (1997). Recently, Broadberry (2006; Broadberry and Ghosal 2002) has shifted his attention to service industries, as he thinks the major cause of productivity differences between the two continents does not lie in manufacturing but in the difference in their ability to increase efficiency in service industries.

[9] Major empirical research on endogenous sunk costs has been done by John Sutton (1991, 1998), who draws heavily on industry histories.

[10] Gomery (1985). Research by Kraft (1996) suggests that the talkies' effect on the unemployment of musicians was high compared to radio.

in commercially exploiting cinema technology, and its industry experienced an export-led development. It became home to Europe's largest film producer–distributors, although domestic French cinema expenditure remained relatively low. Moreover, linguistically France is somewhat removed from the other two countries. Britain is included because it was the second-largest film market in the world, although its own film industry was relatively weak. It was also linguistically close to the United States. Disproportionate attention will be given to the United States because eventually film production and distribution became concentrated there, and it played a leading role in the commercialisation of entertainment globally.[11]

Several other European countries figure on the sidelines. These include Germany and Italy as well as smaller countries such as Denmark and Sweden. Film industries outside the Western world – such as the Japanese, Indian or Hong Kong industries – have been left out. Since 1945 they have become quite successful relative to Europe, but before that they were internationally insignificant.[12]

Other explanations than the industrialisation hypothesis are possible. The emergence of cinema could have been driven, for example, by exogenous advances in science and technology, by urbanisation-induced agglomeration effects or the increasing strength of intellectual property rights culminating in the Berne Convention of 1909. Motion pictures could have constituted an entirely new 'good' incomparable with any existing products, and therefore could not have been a substitute for live entertainment. Motion pictures could have emerged entirely by chance as the outcome of a random process; if history were to be 'reset' from 1870 onwards, cinema might not have emerged at all when it did. This book can aim for no more than to show convincingly that its industrialisation hypothesis can explain the emergence, development and productivity impact of motion pictures better than other explanations. Any stronger claims are limited by the available data and sources.

Yet the hypothesis is broad and can potentially encompass aspects of these potential alternatives. As with many works in economic history, the approach holds the middle ground between the logic of scientific discovery and proposing a historical narrative. It investigates ideas and hypotheses that can potentially be tested deductively and proved wrong.

[11] This study does not endeavour to provide a chronological and descriptive history of the film industries in these three countries. Other works can be consulted for this. See, for example, Harpole (1990–2000) for the US, Low (1948–1985) for Britain, Sadoul (1948–1954) or Mitry (1967–1980) for France. A detailed study of Wales, including comparisons with the rest of Britain, is Miskell (2006a).

[12] See, for example, Lent (1983, 1990).

But it also offers a historical narrative, a text that gives meaning to historical facts and embeds them in a linguistic configuration, in which case narratives with a larger scope, that explicitly and implicitly encompass the largest number of ideas, facts, events, opinions, theories in one coherent narrative are preferred over narratives with a smaller scope.[13]

Another important tension in economic history is that between the general and the particular. For some phenomena, such as industrial concentration, multinationalisation and international trade, the most meaningful unit of analysis may be the particular industry. Indicators such as seller concentration and set-up costs are similar across countries, lending support to an industry focus.[14] Eventually, a series of historical industry studies could lead to general conclusions about the role of particular industries in economic development.

This book uses business history to examine organisations, industrial economics to analyse the industry as a whole and economic history to investigate the origins of cinema and to conceptualise and quantify its effects on the entire economy. A quantitative approach is combined with a qualitative one, deductive testing with narratives, economic models with unique, singular agents, demand dynamics with supply dynamics, and, finally, research on national levels with comparative research. The book will argue that industrialisation did not stop in the nineteenth century but is still going on today, with ever newer waves of structural change. This is a story of how the economy accommodated a new technology and a new industry, giving microeconomic insight into the workings of the process of creative destruction, dynamic efficiency, Schumpeterian growth and long-term changes in the economy's structure. The story goes beyond abstract growth contributions and industry-wide industrialisation processes to specific firms with large market shares that shaped the industry's development. The latter were equivalents to Schumpeter's pioneer entrepreneurs, and the way they changed spectator entertainment to creative destruction.[15] Schumpeter himself, who understood 'economic analysis' as a combination of history, statistics and theory, wrote late in his career that 'if, starting my work in economics afresh, I were told that I could study only one of the three but could have my choice, it would be economic history that I should choose'.[16]

The structure is thematical rather than chronological. It moves from the general to the particular. The first part deals with the entertainment

[13] On falsification, see Popper (2002); on narrative scope see Ankersmit (1994); on meta-narratives, see, for example, O'Brien (2001).
[14] See, for example, Sutton (2007).
[15] Schumpeter (1976, 2004).
[16] Schumpeter, as quoted in McCraw (2006: 261).

industry at large within the wider economic development of society, the second part focuses on the emergence and take-off of the film industry, and the third investigates the broader economic meaning of these developments across the dimensions of international trade, entrepreneurial discovery, productivity growth and industrialisation.

The first part examines how, during the nineteenth century, the deregulation of entertainment production, innovation and changes in business organisation brought about the development of live entertainment into a commercial industry, integrating local and regional entertainment markets into national ones. It then examines how, in a second stage, when commercial live entertainment had reached its height and the existing configuration of the entertainment business could hardly improve productivity any further, the film industry emerged and started to develop standardised, tradeable mass entertainment, integrating the national entertainment markets into an international one. Chapter 2, the first chapter of Part I, investigates the integration of live entertainment markets before the film industry took off. The subsequent chapter examines the increase in consumption of entertainment from the late nineteenth century onwards and examines its causes. The chapter investigates the hypothesis that a boom in demand for entertainment preceded the take-off of the film industry, and assesses the extent to which motion pictures were used as substitutes for other entertainment products and services such as alcohol, theatre, vaudeville and music hall. Chapter 4 investigates these issues in more detail at the cross-section level for various benchmark years.

The second part studies the development of this emerging industry. It discusses how cinema technology further integrated the freshly established national entertainment markets into an international one. It shows how the emerging industry structure, combined with a historical event – the First World War – led to the decline of the European film industry and Hollywood's rise to dominance. Chapter 5 examines the technological development of motion pictures and argues that they not only constituted a product innovation, but also a process, market, supply and organisational innovation. The chapter constructs and analyses time series to pinpoint their take-off. Chapter 6 examines how some years later firms started a quality race by massively escalating their outlays on film production and marketing. This first resulted in increasing industrial concentration and then in geographical concentration in Hollywood. Chapter 7 investigates how the resulting dominance of American film multinationals and of southern California could remain fixed for the rest of the century, and why other film industries did not catch up. Chapter 8 aims to underpin these findings on a microeconomic level. Using film

budget case studies, it explores how exactly the jump in endogenous sunk production outlays took place, and what share of them was paid to creative inputs such as star performers or the rights for famous stories.

The third and final part makes up the balance and looks at the industrialisation process as a whole and its wider implications. Chapter 9 examines the effect of the one-off qualitative change (tradeability) that cinema brought about in international trade in entertainment. Chapter 10 investigates how modern market research techniques, pioneered by film companies, institutionalised the entrepreneurial discovery process, and standardised, automated and made tradeable the knowledge that entrepreneurs obtained about the market. Chapter 11 first analyses quantitatively the effect of cinema technology on productivity and economic growth. It then goes on to assess qualitatively to what extent motion pictures provided a model that can also explain structural change in other service industries. Finally, Chapter 12 evaluates how the developments discussed in all the preceding chapters influenced the further development of the international film industry after 1945, and where the evolution of entertainment production that started with the liberalisations of the nineteenth century has brought the Western world today.

This book examines both live entertainment and filmed entertainment, covers three countries and over a century, and in addition moulds a wide array of sources into one framework, incorporating company archives, trade magazines and contemporary industry studies, but also government reports, censuses and recent works of other scholars. This wide perspective is necessary because despite the film industry's significance hardly any economic historical framework or literature exists from which to narrow the topic down to a smaller scale.[17] For the same reason, at times description dominates analysis, since part of the task is merely searching, locating, collecting and combining data on the entertainment industry from many different kinds of places, and extracting or constructing long-term time series and other information. The descriptive elements together provide a roadmap for the analytical work.

Live entertainment and motion pictures have rarely been studied together as being part of one industrialisation process.[18] Moreover, the history of the film industry has so far generally been written by scholars working in film studies, focusing on film style and film content, even if business practices and economic issues are often discussed along the

[17] The literature that comes closest is a series of German dissertations published during the 1920s and early 1930s, such as Hayler (1925) and Gessner (1928). Bächlin (1945) is the ultimate exponent of this literature.

[18] Separate economic-oriented studies of the history of live entertainment are Bernheim (1932); Poggi (1968); Moore (1968); Davis (2000); Le Roy (1990).

way.[19] Works on the economic development of live entertainment generally focus on the high-class part of it and the pluses and minuses of subsidies, rather than treating it from a pure market perspective.[20] Several recent studies by economists focus on isolated, highly theoretical issues within the contemporary film industry, paying little attention to historical development.[21]

Although the history of the entertainment industry from the late eighteenth century onwards is interwoven with many other historical currents or developments, such as revolutions, nationalism, or artistic streams like romanticism, naturalism and realism, this work will exclusively take an economic history perspective, since that is where the major gap in knowledge exists. It does not endeavour to gain insight into the political, social or cultural history of live entertainment and of cinema, for which other works can be consulted.[22] However, by confining itself to the economic plane of inquiry, it may nevertheless yield insights of use to those who want to study entertainment from one of those other perspectives.

In short, what follows will venture into uncharted territory. Its breadth and scope may disquiet experts in narrower topics or fields, its broad narrative structure may offend the cautious scientist, its abundant hypotheses may cause discomfort to those who love historical narratives. Nevertheless, it is hoped that this voyage of discovery will arouse curiosity, tickle the minds of everyone and spark off a lively debate.

Our expedition will start in the eighteenth century, when most consumers enjoyed their entertainment in an informal, haphazard and often non-commercial way. While making a trip they could suddenly meet a roadside entertainer, and their villages were often visited by saltimbanques. Itinerant friars, preachers and schoolmasters put on performances in the market places of large towns, at times attracting crowds of over 15,000 spectators.[23] Seasonal fairs attracted a large variety of entertainers, such as musicians, magicians, dancers, fortune-tellers, sword-swallowers, minstrels and singers.[24] Only a few large cities

[19] See, for example, Bordwell, Staiger and Thompson (1985).
[20] See, for example, Baumol and Bowen (1966); a French equivalent is Vessillier (1973).
[21] See, for example, Chung and Cox (1994) or Albert (1998). An exception is Caves (2000), written for a more general readership.
[22] A few examples are Hemmings (1994); Rearick (1986); Sanderson (1984); Léglise (1970–1980); Dickinson and Street (1985).
[23] Burke (1988: 99–101). Burke's overarching hypothesis is that around 1500 elite culture became entirely different and distinctive from popular culture, but that around 1800 the elite rediscovered and idealised popular culture (for example through the romantic movement), and tried to preserve what was left of it.
[24] *Ibid.*

harboured legitimate theatres, the performances of which were strictly controlled by the local and national rulers.

What follows argues that this world was creatively destroyed in two stages. First, commercial, formalised and standardised live entertainment emerged and inventively annihilated a fair part of traditional entertainment, integrating entertainment into national markets. In a second stage, when commercial live entertainment had reached its height, motion pictures emerged. In their turn they creatively destroyed this universe and transformed it into the modern world of automated, standardised and tradeable mass entertainment.

Part I

The rise of entertainment

Introduction to Part I

Before the advent of the modern newspaper industry in the nineteenth century, theatrical live entertainment was almost the only mass medium, reaching large numbers of people instantly, and at the same time.[1] Many people in the Western world were still not able to read. So great was deemed the power of the spoken word on stage, that most governments highly regulated and restricted theatre building and theatre performances. Towards the end of the eighteenth century, with a general trend towards more democratic forms of government and more representation of the various groups of population in government, governments throughout the Western world started to deregulate the theatre. The first to do so were the former British colonies in North America, just after they had formed the United States. Second was Britain, which finally disposed of its infamous theatre patents in the 1840s. Third was France, which despite a brief spell of liberalisation after the Revolution, waited until the 1860s before it liberalised the industry.

These deregulations had far-reaching consequences. They enabled a strong expansion of entertainment production, inaugurating the start of a never-ending growth phase lasting into the twenty-first century. The organisation and technology of theatrical production moulded entertainment into a large-scale, integrated, highly industrialised and standardised business with complex production and distribution systems. On the demand side, the deregulation freed a pool of repressed, underserved demand for theatre, and created further demand for new forms of live entertainment. Moreover, it unleashed demand from the lower classes of the population, which finally could enjoy theatrical entertainment.

Part I will briefly discuss the emergence of the modern live entertainment business in the United States, Britain and France. It maps the development of production and consumption during this period, and tries to show how this culminated in a peak in production and

[1] This included informal open-air entertainment in market squares. Burke (1988) notes that in larger European towns these events could attract 15,000–20,000 persons.

consumption of entertainment at the end of the nineteenth century, which ultimately instigated the take-off of the film industry in the mid-1900s.

In this way, the first part sets the backdrop for the second. It shows the world from which motion pictures emerged, and argues that the industrialisation of entertainment took place in two stages. In the first stage highly organised, formalised, nationally integrated and standardised live entertainment, such as theatre, music hall and vaudeville, partially replaced existing forms of entertainment, such as non-commercial amusements, fairs, and entertainment provided by roadside entertainers or travelling bands of artists.[2] When this first phase had reached its zenith, and a large part of entertainment was provided in a carefully organised, high-productivity manner, cinema technology took industrialisation a step further and in its turn automated, standardised and made tradeable this commercial live entertainment.

The focus will be on the theatrical forms of spectator entertainment, such as theatre itself, music hall, vaudeville and café-concerts. Other kinds of spectator entertainment, be it large concerts, opera, street musicians or roadside entertainers, will receive less attention. The reason is that theatre, vaudeville and music hall became organised and managed like modern businesses, increasing productivity and substituting for many other forms of entertainment. Opera and large concerts were often more singular, artistic and elitist events with a large social and cultural meaning.[3] The rise of efficiently managed theatre, music hall, and vaudeville circuits within many Western countries during the nineteenth century could even be seen as part of 'the assertion of the cultural supremacy of the vernacular language and of the native people, against a cosmopolitan aristocratic culture often employing a foreign language'.[4]

On the other hand, the 'cottage' forms of popular entertainment, although probably serving a vast number of consumers,[5] did not develop into modern business enterprises and were sometimes non-commercial. Moreover, quantitative information is largely lacking. Cases for which some is available suggest that these forms were marginal, in monetary terms at least. In Paris in 1817, for example, they were like fishing boats between aircraft carriers. While the 11 Paris theatres had a total revenue of 5.2 million francs, the 179 other small-scale entertainment venues – varying from *bals*, *pétit spectacles* and *curiosités* to *cafés à soirées*

[2] On existing traditional, and often non-commercial entertainment, see Burke (1988).
[3] See, for example, Le Roy (1990: 151). A study of the business side of opera is Rosselli (1984).
[4] Hobsbawm (1997: 311). 'Longuage' is Hobsbawm's word.
[5] See, for example, Jones (1939).

amusantes – had combined sales of 0.65 million francs – only 11 per cent of all entertainment expenditure. This translated into average annual takings of 475,000 francs for theatres and 3,600 francs for other establishments, more than a hundred-fold difference.[6]

Part I is divided into three chapters. Chapter 2 will look at the integration of entertainment markets before the film industry took off, taking place by other means, such as railroads. It analyses and compares the changes in live-entertainment production in the US, Britain and France, both quantitatively and qualitatively. The subsequent chapter examines the increase in consumption of entertainment from the late nineteenth century onwards and its causes, such as an increase in leisure time, disposable income and population, and factors that concentrated demand spatially, such as urbanisation and transport networks. The chapter investigates the hypothesis that a boom in demand for entertainment preceded the take-off of the film industry, and assesses the extent to which motion pictures were used as a substitute for other entertainment products and services such as alcohol, theatre, vaudeville and music hall. Chapter 4 investigates these issues in more detail at the cross-section level for various benchmark years for which detailed microeconomic data on household expenditure or prices and quantities were available.

At times the research has a descriptive emphasis since it provides the background for much of what follows. It shows the world in which the developments analysed in the latter parts of this book took place, and provides the information necessary for the calculation of the social savings of the film industry in Part III. What follows starts by discussing live entertainment, but gradually deals more and more with cinema. Besides the fact that this part aims to discuss how cinema industrialised live entertainment, two practical reasons exist for the inclusion of both live entertainment and cinema into one part: in the period for which reliable data on entertainment production and consumption are available, cinema already existed. Further, for several topics, especially the census data on employment, often only aggregates are given and no breakdowns into cinema and live entertainment are available.

This part will start with the country that deregulated its entertainment industry the earliest. Perhaps coincidentally, this country, lacking a cosmopolitan aristocratic culture, also became the place where the largest part of the world entertainment industry would ultimately be concentrated.

[6] Data concern the entire 1817–8 entertainment season. Computed from Le Roy (1990: 342–3).

2 The emergence of national entertainment markets

Throughout the Western world, theatrical entertainment was a highly regulated and restricted activity.[1] Before the advent of the daily, large-circulation newspapers it was the only medium that could reach large groups of people instantly and at the same time. It thus had the potential to stir popular sentiments and even to result in unrest and uprisings.[2] The Belgian revolution of 1830, for example, was set off by an opera, Auber's *La Muette de Portici*.[3] Since stage productions could be used for political purposes, and since few other mass media were available to reach the popular classes, most governments deemed control of the stage essential to the maintenance of order and stability.

The British colonies of North America all had their restrictions and regulations on theatre, as did the early states of the union. Some states, such as Massachusetts and Rhode Island, had laws that completely forbade theatres and stage performances. Others required licences for theatre buildings that were seldom awarded and only under strict conditions. In addition, many states required licences for plays and individual performances.[4] As a consequence, theatre buildings hardly existed. The first wooden building was constructed in Williamsburg, Virginia, in 1716, but this fixed theatre seems to be a much-noticed exception rather than a rule. Travelling musicians and performers performed in barns, taverns or the open air. From the 1740s onwards, some theatre companies from Britain visited the US, and also more temporary wooden theatre buildings were erected.[5] According to Alfred Bernheim, most inputs came from Britain at the time: 'Our theatre came to us from England, not merely ideologically but materially as well, in the shape of plays, actors, managers

[1] This chapter is not a full economic history of live entertainment in the three countries, for which other works can be consulted, such as Bernheim (1932), Poggi (1968) or Sanderson (1984).
[2] See, for example, Boyer (1978); Van Ginneken (1992); Donajgrodzki (1977).
[3] Hobsbawm (1997: 333).
[4] Bernheim (1932: 13); McConachie (1998); cf. Engle and Miller (1993).
[5] Bernheim (1932); McDermott (1998).

and even of costumes and sets. Everything was imported except the buildings which housed the performances.'[6]

Because of these regulations, the construction cost of the theatre building was seen more as an operating cost than as capital investment, and this restricted the possibility of building permanent brick theatres.[7] Managers often wanted to recoup the cost of the building in one season. In the late eighteenth century, a New York theatre building could be erected for less than $2,000 and its entire cost recovered from the receipts of just three or four performances.[8] The first brick theatre was built in Philadelphia in 1766, followed by a second one in Annapolis in 1771.

After the war of independence many regulations were relaxed and by the turn of the century few legal restrictions against theatre persisted in the states. As a consequence, more and more fixed theatre buildings emerged, although a large number were still made of wood. No distinction existed between theatre company and theatre building: nearly all companies were attached to a specific building. Most cities had resident stock companies, which performed plays out of a number of pieces they knew. Theatre-goers saw the same actors time and again, each time in a different play.[9]

In Britain in the times of Shakespeare theatre was flourishing. Many theatres existed which turned out numerous productions. Some even argue that the Shakespearean boom in dramatic production was partly due to favourable economic circumstances, such as low wages, which kept productions relatively cheap, and opportunity costs for the audiences limited.[10]

During the troubled times in the mid-seventeenth century, Cromwell and the puritans forbade theatre. Playhouses were pulled down, actors were branded as vagabonds and could easily be arrested. In 1660, theatre was allowed again, but only two theatres received a royal patent that enabled them to stage drama, the Drury Lane theatre, and the theatre in Lincoln's Inn Fields, which later moved to the first Covent Garden theatre.[11]

This strict regulation of theatre does not mean that no entertainment existed at all. Other theatres or venues staged pantomime, concerts, songs, or had animal spectacles, magicians and rope dancers. As long as two actors on stage did not talk to each other, the theatres could stage a lot of things. The two patent theatres were aggressive in the defence of

[6] Bernheim (1932: 5). [7] *Ibid.* [8] *Ibid.*: 10.
[9] *Ibid.*: 6–10; cf. Engle and Miller (1993). [10] Baumol and Oates (1972).
[11] Weightman (1992: 20–1); cf. Mander and Mitchenson (1963).

their patents, and sometimes had agents who monitored other theatres. One theatre owner, the star actor John Palmer, was arrested when one of his pantomime actors inadvertently said a word to another. Probably the smaller, more popular theatres were able to stage some drama, as long as it did not attract attention.[12]

During the first half of the nineteenth century tensions rose, and several public outcries surfaced against theatre regulation. London counted many 'penny gaffs' or cider cellars, small, shabby, half-illegal theatres, that often staged dramatic versions of theatre parts.[13] The journalist John Hollinghead recounts in his memoirs how, as a boy, he attended an adapted performance of *Othello* in an East End penny gaff, which halfway through was ended by a police raid:

> Dog fights, rat fights, badger drawing, skittle-sharping, even Shove-halfpenny were more or less winked at; but Shakespeare – Shakespeare without a licence – Shakespeare in defiance of the patent houses, Drury Lane and Covent Garden – horrible! Degrading! Everybody was very properly taken into custody. The actors in their paint, the fiddlers with their instruments of torture, the audience in their rags, the servants, the proprietor – some eighty people in all – were marched off to Worship Street [the police station].

At the police station the people were fined, but Hollinghead was sent away with a box around the ears.[14]

During the first half of the century, entertainment gradually shifted from the outdoors to the indoors. In the eighteenth century, pleasure gardens had become popular. These were gardens where people could eat and drink and enjoy variety acts such as fire eaters, magicians, sword swallowers or dog fights. Fairs were also popular. The villages around London regularly held fairs so that at many times during the year a fair was close by the city. A well-known one was the Bartholomew Fair, where farmers traded cows, tradesmen tried to sell their wares, and drinks and food were served. All this was complemented by entertainments ranging from street artists to popular shows.[15]

In London, these outdoor amusements gradually disappeared. The authorities were concerned about the unrest they could stir and the extra work and policing that they brought. The increasing industry and smog also made the atmosphere less amenable in the city. The Bartholomew Fair, for example, became smaller in the 1850s and closed down in 1855. By that time, most pleasure gardens had also disappeared.[16]

[12] Weightman (1992: 25–9); Rowell (1981).
[13] For a vivid description of a penny gaff, see Purser (1978).
[14] Quoted in Weightman (1992: 24). [15] *Ibid.*: 10–19. [16] *Ibid.*: 17.

In the 1830s the 'gin palaces' emerged, quite large places where liquor was served. They carried the innovation of a standing bar with a barmaid, for fast service and fast drinking. Taking advantage of the decreased liquor tariffs, businessmen invested heavily in them, and they became so popular that the government made beer licences available almost for free, to counter liquor consumption.[17] Some gin palaces – probably less than 10 per cent – also provided entertainment.[18]

In 1843, finally, the patent monopoly was abolished, although proprietors still needed to obtain a licence from the Lord Chamberlain. They could choose between operating a theatre and performing drama, or operating a music hall with music and variety acts such as magicians, rope dancers or animal acts. Complaints about these distinctions and other legal intricacies led to heated debate in parliament.[19] Preventive censorship of plays, carried out by the Lord Chamberlain's Office, remained in force until 1969.

Although fifty years later than in the US, British liberalisation happened a quarter century earlier than in France and also earlier than in many other European countries. Along with fast urbanisation and early industrialisation this may have contributed to the high British entertainment expenditure in the early twentieth century.

From the 1850s onwards many music halls were built. By 1870 London counted thirty-six large halls.[20] The upper classes sometimes found them rather popular, but compared to the East End theatres, penny gaffs and cider cellars, they were quite sophisticated. They were open from about seven to midnight. People could walk in as they liked, with latecomers paying less. They could see a few acts, eat and drink, or walk off to the promenade sidewalks. Initially women were not allowed in, but this gradually changed. Often they could stand at the gallery, separated from the men, if they gave their name and address, a way to prevent prostitution.[21]

France had a long theatrical tradition. Even before the Revolution many theatres already existed that were not exclusively visited by the bourgeoisie and nobility; the lower classes were part of the audience.[22]

[17] *Ibid.*: 13–16.
[18] Somewhat later (in 1852) in Manchester, for example, 28 pubs out of 481 and 21 beer shops out of 1,298 provided musical entertainment, for a population of 303,000 (Baylee 1852, as quoted in Hobsbawm 1997: 335).
[19] Weightman (1992: 49–52); Booth (1991).
[20] *Era Almanak* 1870, quoted in Weightman (1992: 30).
[21] *Ibid.*: 32–8; Hoher (1986: 73–92); cf. Davis (2000: 53–5, 59).
[22] McCormick (1993); Lough (1957).

In the later eighteenth century a number of small, popular theatres opened around Paris.[23]

Authorities were concerned about the power of the spoken word, and carefully regulated theatre. The market for entertainment was therefore probably under-served. Poorer people especially might have wanted cheaper and more popular entertainment. Only a few larger cities had secondary theatres that staged the more popular fare.[24] Since licences were restricted and existing theatre owners sometimes lobbied authorities to prevent competition, regulation was possibly more decisive for the limited number of theatres than potential market size.

The Revolution brought the decree of 1791 that gave every citizen the freedom to found a theatre. An investment boom followed, especially in Paris, where many popular theatres opened on the boulevards.[25] Eventually Napoleon became concerned about their unruly character. As the only mass medium, they controlled access to the masses. In 1807 he ended deregulation and restricted the number of Paris theatres to eight: four 'normal' legitimate theatres, and four others.[26] In provincial cities, new theatres still received permission – between ten and twenty in all between 1807 and 1850, judging from the licence applications.[27] These theatres were usually financed by a large group of shareholders from the local elite.[28]

Many other forms of entertainment existed, separated by regulation that aimed to prevent competition between them. Pantomime, for example, was popular in fairgrounds from the late eighteenth to the mid-nineteenth century, and could be staged without a theatrical licence because the performers did not use words.[29] The main form of entertainment was vaudeville, the combination of songs with text, which had a strong fairground antecedent.[30]

Melodrama emerged in the 1800s and became popular among the working classes. In a society that changed in ways that could hardly be

[23] McCormick (1993: 46). On the business of French theatre before 1800 see, for example, Lagrave (1972), which contains a wealth of financial information for a few theatres; Rigal (1901), which contains a comprehensive chapter on theatre expenses and revenues in the seventeenth century; Boncompain (1976), which contains abundant information on actors' salaries.

[24] See above. [25] Hyslop (1945). See also Root-Bernstein (1986).

[26] McCormick (1993); see also Carlsa (1972); Hemmings (1994: 101–12).

[27] Archives Nationales, Paris, boxes F/12/6832 and F/12/6794.

[28] See table 2.3, below. [29] McCormick (1993: 143, 146–7).

[30] *Ibid.*: 114–17, 131. From the 1850s vaudeville moved from the larger to the smaller theatres. On vaudeville, see also Green (1965: 133). Green describes how dramatist Eugene Scribe, who specialised in vaudeville operas, rationalised the development of new productions. His home was like an atelier, with many people working on one production at the same time.

understood, people liked simple stories in which universally good and honest people were rewarded and bad people punished. Melodrama may have been a way to combine a Christian ethic with an emerging capitalist society that did not correspond to the values of altruism, solidarity and love of one's neighbour.[31]

Another genre was the féeries, spectacular forms of entertainment with lavish sets and stages and a lot of spectacle. They emerged from the fairground entertainment of the eighteenth century, and were often produced by performers trying to make a living without infringing theatre patents.[32] Gradually, the genre entered the popular theatres and became more sophisticated. In the 1830s, producing a féerie could cost as much as 100,000 francs.[33] In 1809–10 the wildly successful *Cinderella* féerie appeared in eight Parisian theatres.[34] By the 1860s féeries had come to be perceived as old-fashioned. Only after 1871 were larger and more spectacular revivals of the old favourites staged, lasting until the 1890s, when cinema offered tricks and wonders of a different kind.

Until 1850 censorship varied. It had been formally abolished briefly, but was quickly reinstated in the 1830s, after an assassination attempt on King Louis Philippe on the Boulevard du Temple, the main theatre district of Paris. During the restoration many new theatres opened in the suburbs and Paris theatre buildings became attractive investment opportunities.[35]

The gradual deregulation stimulated entertainment production.[36] Between 1807 and 1864, licences were restricted. In practice, however, regulations became less enforced, resulting in *de facto* deregulation.[37] In 1864 theatre licensing was finally liberalised. Anybody could set up a theatre. As in 1791, an investment boom followed. Between 1870 and 1874 censorship, carried out by the Ministère des Beaux Arts, also was abolished, then reinstated, to be finally ended – for budgetary reasons – in 1905.[38]

From the mid-nineteenth century newly founded music halls and café-concerts also started to offer dramatic parts mixed with the music. This resulted in the protest of theatres, which claimed they infringed

[31] McCormick (1993). Barthes (1957) showed how the popularity of the *Cinderella* tale closely followed industrialisation, driven by the tension between Christian ethics and an emerging capitalist reality, he argued.
[32] McCormick (1993: 148). [33] *Ibid.*: 150.
[34] *Ibid.*: 152. Cf. Barthes (1957). [35] *Ibid.*: 46.
[36] Green (1965: 143). After the deregulation of the press in 1881, more than a decade after theatre, the number of newspaper titles jumped. Provincial titles nearly trebled from 114 in 1880 to 302 in 1892, and weekly magazine titles almost doubled from 1,156 in 1882 to 2,000 in 1913 (Dupeux 1974: 158).
[37] Hobson (1978). [38] *Ibid.*: 110; Hemmings (1994: 224–5).

their licences and patents. From 1867, café-concerts were officially allowed to stage live entertainment such as drama and vaudeville.[39] In the 1880s the most popular café-concerts started to attract a more fashionable audience. Several permanent circus buildings as well as tents and other temporary structures were also used to provide entertainment.[40]

The changing industry structure

The United States

The development of the American theatre industry was characterised first by the emergence of local units that were fully integrated. Subsequently, production at the local level vertically disintegrated and horizontally integrated across space by using routed actors and forming theatre circuits. This integrated regional and national markets.

At the local level, R&D (the making, designing and rehearsing of a play), production (performing the play), distribution and retail (selling spectator-hours) were initially all integrated. Eventually, however, ownership and management of the theatre building became separated from the theatre production companies.[41] The theatres themselves eventually integrated horizontally into circuits, either by contracts or by ownership. The production companies started to tour many theatres, instead of remaining fixed in one city. In an intermediate phase, star actors travelled between theatres, increasingly accompanied by a few support actors, while local stock companies merely provided the supporting cast.[42] First local, and then national, booking offices emerged that guaranteed theatres a steady entertainment supply and production companies efficient routes, with as few days as possible without a theatre. This industry structure maximised the utilisation time of high-quality creative inputs and theatres, as well as variety for the consumer.

Ever-increasing demand for entertainment (discussed in the next chapter), falling transport and communication costs as well as growing urbanisation caused the change in industry structure. Urbanisation meant that more cities reached the minimum size for profitable performances and thus facilitated more efficient routes for travelling companies, with less downtime.

Available evidence shows that the number of resident stock companies (the fully-integrated form of theatre production) grew substantially until

[39] McCormick (1993: 132). [40] Hemmings (1993: 9–27); cf. Hobson (1978).
[41] McDermott (1998).
[42] McConachie (1998: 58); McArthur (1984); Bernheim (1932).

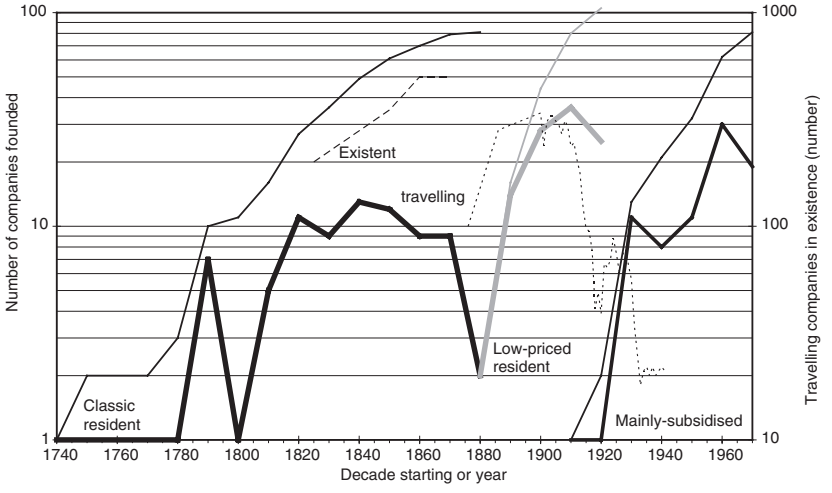

Figure 2.1 Number of resident theatre stock companies founded in the US, by type, per decade, and annual number of travelling companies, 1740–1979

Key: Bold lines show the number founded per decade, unbroken thin lines show the hypothetical cumulative of the bold lines below them.
Classic resident = the classic (original) resident stock companies.
Existent = number of classic resident stock companies in existence.
Low-priced resident = new low-priced resident stock companies.
Mainly subsidised = mainly subsidised new resident stock companies.
Travelling = the number of travelling theatre companies in existence during a year (1876, 1886 and from 1900 annually).
Source: Constructed from the listings in Durham (1986); travelling companies constructed from Brockett and Hildy (2003), Bernheim (1932).

1850, and probably remained substantial into the 1860s and 1870s (figure 2.1). In the 1820s, however, travelling stars had already become more common. Initially, travelling companies often used transport over water. From the mid-nineteenth century, railroads further decreased transport costs and made land-bound cities profitable. Increasing urbanisation also made travelling companies more viable: more cities of a certain size made for routes on which travelling actors could generate more revenue. A reverse development was formed by the floating theatres that emerged in the 1830s, which visited all the cities down a river. When steamships became available these 'showboats' became more widespread as they then could also move upstream easily.[43]

The showboats foreshadowed developments after the Civil War, when decreased transport costs and journey times, enabled by the railways,

[43] Londré and Watermeier (2000: 226).

allowed whole theatre companies to travel over land with a complete production, including the scenery and orchestra. Every June, theatre managers from all over the country would travel to Union Square in New York City, and contract the travelling companies for the next season.[44] When a play was successful in New York, duplicate companies were sent around the country. Most resident companies disappeared and theatre ownership and the production of theatre plays became fully separate activities.[45] By 1870 about fifty major resident stock companies were left and this number was declining rapidly.[46]

Intriguingly, however, as the 'traditional' stock system was replaced by travelling stars and then travelling companies, a new form of resident stock company emerged that offered entertainment at prices far below those charged by the travelling companies, often in smaller, less prestigious theatres. The study by Durham clearly shows how the number of these new low-price stock companies increased sharply between the 1870s and the 1900s, after the traditional resident companies had disappeared (figure 2.1).[47]

This phenomenon of the survival of old media in a different form surfaces time and again in the history of the entertainment industry. We will call it here dynamic product differentiation, and it occurs both within a form of media and between different forms of media.[48] The key is the capacity of the distribution system that delivers the entertainment to the consumers. Such a system may be the theatre, the cinema, the radio, the television, and its capacity can be measured by, for example, the maximum number of spectator-hours that it can distribute within a day. The scarcity of the distribution capacity, together with the size of the market, is the economic characteristic that drives dynamic product differentiation. If this capacity is very scarce, the medium generally focuses on the lowest common denominator, to maximise capacity utilisation, given that a large part of costs are fixed, and often sunk. When a new distribution channel emerges, distribution capacity increases and the channels are able to focus slightly less on the lowest common denominator, but can target different audience segments to maximise capacity utilisation and avoid pure price competition. The distribution delivery system with the highest capacity will focus on a wider segment (a lower common denominator) than the system with the lower capacity.

[44] *Ibid.*; Frick (2000: 200–3).
[45] McDermott (1998); McConachie (1990: 47–70, 50–8).
[46] *Ibid.*; Frick (2000: 200–3). By then eighty major resident stock companies had been founded whose traces can still be identified today (figure 2.1).
[47] Durham (1986).
[48] On product differentiation within motion pictures since 1945, see Sedgwick (2002).

Within a particular type of entertainment dynamic product differentiation went hand in hand with price discrimination. To see a new theatre play as soon as it was out, for example, one needed to pay a high price in a big city theatre. Later one could see versions performed by travelling groups and resident stock companies, generally at lower prices and often at far lower quality. Communities that did not constitute markets large enough to support first-class theatre could still enjoy lower-quality versions later on at lower prices.[49] This system of price discrimination made possible distribution into areas where it would otherwise not have been profitable, and in principle made possible larger fixed and sunk expenditures on developing new productions.

As mentioned above, when travelling companies became dominant, the resident type of production did not completely disappear, but simply diversified itself. When, from the mid-1910s onwards, low-priced resident stock was automated away by cinema, even smaller-scale and heavily subsidised stock companies appeared, aiming at a different segment, and funded in a different way. This dynamic product differentiation did not just take place within certain sectors of the live entertainment industry, such as the theatre industry, but also between different sectors, as will be discussed below.

The remaining community theatres also experienced competition from travelling tent theatres that served the smallest cities and places too small to have their own theatre. Tent theatres are known to have been operating from the late 1850s. Precise quantitative figures are lacking, given the itinerant nature of the business. Estimates show that by 1920 about four hundred tent companies were on tour, visiting about sixteen thousand places that year.[50]

Coincident with the vertical disintegration of theatre companies from their theatres, the latter started to integrate horizontally into theatre circuits. Although theatre circuits existed as early as the 1800s, because of high transport costs these circuits contained only a few venues owned by one firm using resident companies, or were small touring chains centred around major cities.[51] After the Civil War, many regional circuits emerged, associations of often independent theatres which co-ordinated their booking of travelling companies.[52]

The circuits decreased transaction costs, as only one representative had to travel each June to New York City and contract the acts on Union

[49] In France, we shall see that price discrimination extended as far downwards as to single performers travelling with puppet theatres to perform versions of Paris plays in rural areas.

[50] Londré and Watermeier (2000: 226). [51] *Ibid.* [52] *Ibid.*: 203–4, 210–12.

Square and, moreover, acts that did not live up to contracts were kept from all theatres in the circuit. Secondly, the circuits increased the bargaining power of theatres against the travelling companies, as the companies had to visit all theatres or none. Buying in bulk made it easier to get the best acts at a good price. Third, circuits realised efficiency gains, because the co-ordination guaranteed supply, reducing the risk of empty theatres, and by optimal routing travel cost for the theatre companies was also reduced.

Table 2.1 shows the theatre circuits identified by Alfred Bernheim after a close study of the contemporary trade press. The findings suggest that most theatre circuits were founded during the 1880s, probably in response to the spread of travelling companies because of cheap railway fares. Also, nearly all circuits covered only one or a few adjacent states. Circuits encompassing a wider area, or even the nation, do not seem to have existed before the 1890s. The two theatre circuits in the table that had theatres across the US, did so in a few major cities, where they held prestigious theatres. In their case, their circuit probably served a different purpose and fundamentally differed from the finer-grained regional circuits. The size of the circuits was considerable, with twelve theatres as minimum average size, nine as the median and eight theatres as the most common size.

During the 1880s, the routing of the travelling companies became a separate activity, and a few booking offices came to dominate the trade, programming circuits for whole seasons. In 1896 this culminated in the forming of a trust, the Theatre Syndicate, which virtually monopolised booking of all major ('first-class') theatres in the United States. Some of the theatres were owned by the trust's partners, the remainder were not owned, but were programmed by the trust on an exclusive basis, which meant that the theatres had to take the full program or nothing. Upon its foundation in 1896, the Syndicate owned or had stakes in thirty-three theatres, which by 1903 had grown to eighty-three. At its height, the trust controlled booking in about seven hundred theatres, perhaps even more.[53] From the early 1900s onwards, the Shubert circuit successfully defied the trust.[54]

While the theatre industry was going through the development process outlined above, new forms of live entertainment emerged that experienced broadly similar developments.[55] In the 1880s vaudeville,

[53] Frick (2000: 210–18); cf. Bernheim (1932: 6–10, 210–18, 50–2).
[54] Davis (1996: 147–57).
[55] The forms discussed here are not exhaustive. Besides travelling stars, who became common in the 1820s, and later travelling theatre groups, quite a few itinerant opera companies also toured the US (Preston 1993).

Table 2.1. *Theatre circuits in the United States, c. 1870–1900*

Year	Name	Area	N
1873	Mishler Circuit	Eastern Pennsylvania	24
1879	"Texas Circuit"	Texas	
1879	Illinois Opera House Mngrs Ass.	Illinois	12
1880	Eastern Circuit	Between New York and Halifax	*8*
1880	Wisconsin Theatrical Circuit	Wisconsin	*10*
1880	Kansas-Missouri Circuit	Missouri	12
1880	Saginaw Valley Circuit	Michigan	5
1880	Northwest Circuit	Salt Lake City, Montana	8
1880	Southwestern Opera H. Circuit	Montana, Kansas	17
1880	"One night stand circuit"	Or., Washington Terr., Br. Columbia	
1880s	Albert Patterson's Circuit	Kansas	*4*
1880s	Nebraska Circuit	Nebraska	6
1880s	Canadian Circuit	Between Montreal and London, Ont.	*8*
1880s	Central New York Circuit	New York, Central	6
1880s	Oil and Iron Circuit	Pennsylvania	6
1880s	"J. S. Tannenbaum"	Georgia, Florida	8
1880s	Lone Star Circuit	Texas, Arkansas	*14*
1882	M. B. Leavitt	Between Omaha and San Francisco	
1883	Ohio Ass. of Opera H. Pr./Mngrs	Ohio	
1883	"Hayman"	S.F., Chic., N. Y., Salt Lake City e.a.	10
1884	"Charles Frohman"	New York state	
1886	Michigan Theatrical Circuit	Michigan	14
1888	Silver Circuit	Kansas, Col., Nebr., Wy., Ar., N.M.	*6*
1888	Kansas and Nebraska Circuit	Kansas, Nebraska	*2*
1888	"Proctor"	New York state, New England	12
1889	Own Imperial Circuit	Northeast, Illinois, Ontario, Quebec	21
1906	Shubert Circuit	US and Canada	54
1870–1900	Minimum average circuit size	United States and Canada	12
1870–1900	Minimum median circuit size	United States and Canada	9
1870–1900	Minimum mode circuit size	United States and Canada	8

Notes: 1880s = early 1880s.
N = number of theatres in circuit. Italic numbers are given when only the minimum number of theatres in the circuit is known.
Proctor's (1888) size is estimated from the source.
Italic years mean first year that existence of the circuit is mentioned in the source.
The year 1880 is an estimate.
Blank spaces mean the number of theatres in the circuit is unknown.
Source: compiled from Bernheim (1932: 37–48, 66).

a form of entertainment closer to variety, became popular. Circuits of vaudeville theatres emerged around the country, and in the 1900s an alternative circuit of lower-priced vaudeville emerged, which was often interspersed with motion pictures. With the founding of the United Booking Offices of America (UBO/Keith) in 1906, which co-ordinated the acts through the major circuits, vaudeville would become concentrated to the same degree as theatre. UBO had a 'trading floor' on the sixth floor of the Palace Theatre building in New York, with some twenty desks for booking managers. Each desk represented specific theatres or clusters of theatres in various US regions. By the 1917–18 season, Keith was booking nearly 8,000 acts. A typical payment for a big-time act amounted to $250 a week, which was what Fred and Adele Astaire were paid in 1917. Some acts received over $400 a week, however. Five per cent of the fee was deducted by UBO and five per cent by the act's agent. The booking costs for a full programme could range from $1,800 to $2,500 a week, and by the late 1910s reached $3,500 to $4,700 at the high-end venues. Prices for acts for small-time vaudeville were far smaller and could vary between $20 and $100 a week.

In the early 1920s, Keith-Albee owned, leased or operated 5 small-time theatres in New York City, their subsidiaries controlled 12 theatres in New York and its suburbs, and their booking offices booked as many as 300 theatres east of Chicago. The Orpheum circuit covered the cities west of Chicago. By the late 1920s, a merged Keith-Albee-Orpheum owned or booked 700 theatres in the US. Rival circuits at that time were Pantages, Fox, Fally Markus, Shubert, and especially Loew's at the small-time vaudeville level.[56] Both Fox and Loew's/MGM were also major film companies.

In the 1880s burlesque, musical acts featuring scantily clad dancers and performers, also became popular. This form had emerged in the 1850s and achieved considerable commercial success. The show *The Black Crook* (1866), a 'scenic music extravaganza' ran for over a year and grossed $1 million.[57] Burlesque also developed its own circuits. By the turn of the century, when about fifty burlesque companies travelled the US, two main circuits dominated the business, the Western circuit, with more vulgar entertainment, and the Eastern circuit, with more respectable fare.[58] The emergence of these parallel vaudeville and burlesque circuits is consistent with the dynamic product differentiation discussed above: various new 'products' emerged that differentiated themselves from theatre and other existing entertainment forms, and the latter further

[56] The financial information is from Snyder (1996, 2000).
[57] Londré and Watermeier (2000: 225). [58] *Ibid.*: 221–6.

differentiated themselves in turn. While within specific forms price discrimination played an important role, between the various forms of entertainment, product differentiation in itself was the most important factor. The higher the overall distribution capacity, the more forms of differentiated entertainment could be distributed.

As a result of the developments sketched above, by the turn of the century, many different kinds of entertainment existed, such as the legitimate theatre, vaudeville, music groups, minstrels, pantomime, the circus, ballet, opera and concerts.[59] On Broadway in New York, which mainly presented upscale entertainment, of all productions staged between 1899 and 1920, 2,764 in total, 61 per cent were plays, 25.5 per cent were musicals, and the remaining 13.5 per cent consisted of the various other forms of entertainment, such as vaudeville, the revue, the burlesque or pantomime.[60]

In the late nineteenth century, theatre, vaudeville and other live entertainment were becoming a substantial business, the main forms of entertainment, and a major attractive sector for hard-nosed entrepreneurs. Yet the increasing organisation of venues and creative inputs into just a few circuits and trusts probably limited competition and new entry. Industrial concentration became extreme in 1900. Rough estimates suggest that the Herfindahl–Hirschmann index was at least 0.3500 to 0.4000, equivalent to three firms sharing the entire market.[61] Although somewhat high, this does not seem entirely unrealistic, given the existence of the trusts and the fact that sometimes venues had local monopolies.

No reliable time series of the industry's size are available. In 1880, about 5,000 theatres, located in 3,500 cities, existed in the United States. This number included many halls that were only occasionally used as theatres. They were visited by about 250 travelling companies. In addition, at most twenty resident stock companies still existed at the time.[62] Ten years later, out of 297 major US cities, 249 contained 617

[59] *Ibid.*: 1; Buckley (1998); McNamara (2000). [60] McLaughlin (1974: appendix).

[61] Based on changes in markups between 1900 and 1938, using Lerner's index of market power (Bakker 2007b: 19–21).

[62] Moore (1968: 94); Bernheim (1932: 30). The order of magnitude of the estimate is probably correct; early census figures do not contradict them. In 1870 1,185 persons held management occupations, although not exclusively theatre management (see below). If the actual number of theatres was at least half and at most double the number of managers, it must have been somewhere between 500 and 2,000. The lower number yields four professional actors per theatre on average, the higher one, just one. This was not impossible, because many theatres operated only part of the year or the week. However, the estimate (and the 1890 figures quoted below) also suggests that the 5,000 'theatres' in 1880 must have included many halls that were not dedicated theatres, but were only used on special occasions.

theatres and 1,746 halls,[63] and again twenty years later, in 1910, 1,520 legitimate theatres were reported to exist outside the big cities.[64] From 1900 to 1910, between 250 and 350 theatre companies were travelling the US with a production each year.[65] After 1910, theatre performance started a marked and prolonged decline, with the result that by 1930 fewer than 500 theatres still existed.[66]

A rare source that gives long-term comparable time series is the number of plays registered for copyright.[67] This probably does not perfectly reflect the development of the industry, as registered works may or may not have been put on stage, and the average number of performances per play increased markedly. The absolute number of works registered, however, does give some impression of the industry's size, and the yearly change in the number may somewhat reflect long-run growth or decline.

Figure 2.2 lists the number of copyrights registered for dramatic works between 1878 and 1945. In 1878 only a few hundred copyrights were filed, growing to about a thousand at the turn of the century.[68] By the late 1930s, the number had increased to about seven thousand. Over the whole period, the growth was, on average, 3.4 per cent a year. The sharpest rise took place during the late nineteenth century. If the number of plays registered is a reasonable proxy for industry output, that output increased nearly fourfold between 1878 and 1902, amounting to an average annual growth of nearly 6 per cent. Such a real growth rate is exceptional and suggests that the live entertainment industry was a fast growing new industry. After 1910, a gradual stagnation and decline took place, which was only reversed in the 1920s and 1930s. The downturn coincided with the rapid spread of cinemas and the emergence of the feature film, a film which lasted 45–90 minutes, with famous stars and based on a famous story. The peak in copyrights for motion pictures and the subsequent fall are a consequence of the emergence of the long, single feature film as an industry standard, replacing a multitude of small films of various genres.[69]

Another output indicator of the entertainment industry was the number of road companies, the troupes that travelled the theatre routes throughout the United States. This number fluctuated considerably, but nevertheless remained around three hundred travelling companies until

[63] Moore (1968: 94), quoting Billings (1895). [64] *Ibid.*: 94, quoting *Billboard*.
[65] McLaughlin (1974: 271–80); see also figure 2.3, below.
[66] Moore (1968: 94).
[67] On the history of copyright in theatre, see Poggi (1968: 247–9).
[68] On the emergence of copyright law, see Rose (1993). [69] See Chapter 6.

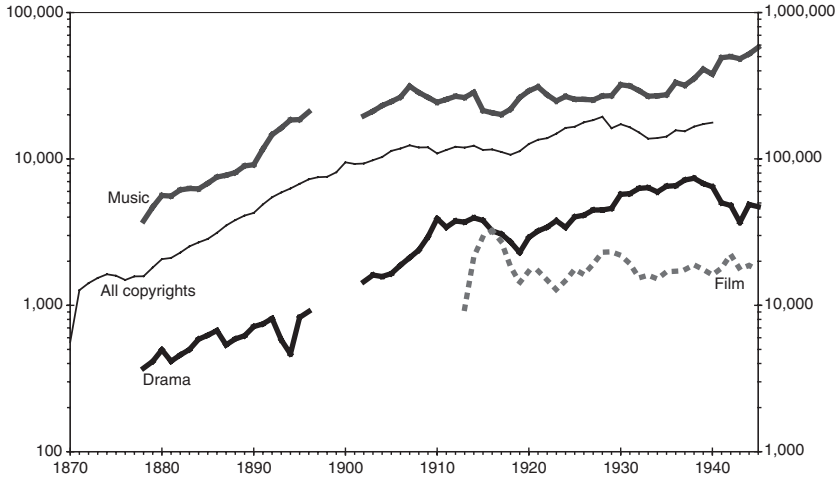

Figure 2.2 Annual copyright registrations for drama, music and motion pictures in the US, 1878–1945

Notes: 'All copyrights' is plotted on the right axis. All other lines are plotted on the left axis.
Drama = dramatic or dramatico-musical compositions.
Music = musical compositions.
'All copyrights' contains several other copyrights, such as rights to books, periodicals, contributions to periodicals, works of arts, models, designs, prints and pictorial illustrations.
Source: Annual Reports of the Librarian of Congress; Annual Reports of the Register of Copyrights, as quoted in US Department of Commerce (1975: 956–7).

1908 (figure 2.3). Then, when fixed cinemas had become established, the number of companies on tour dived to about fifty. Only in the 1920s did a short revival take place, before sound film, introduced in 1927, finally knocked out the road companies. The decline of the live entertainment industry therefore probably took place in two stages. In a first stage, cinema was substituted for the cheap live entertainment in the smaller cities, and in a second stage cinema was also substituted for the expensive live entertainment in the large cities.

This suggests that cinema had a widespread effect on entertainment production outside the large metropolises. The reasons were probably that 'provincial' live entertainment could not easily compete with the attractiveness and prices of cinema, and that films had far lower transport costs and a higher reliability of supply. Also, in a time when theatres often depended on one booking office, cinemas often had several suppliers, or could shift supplier comparatively easily and rapidly.

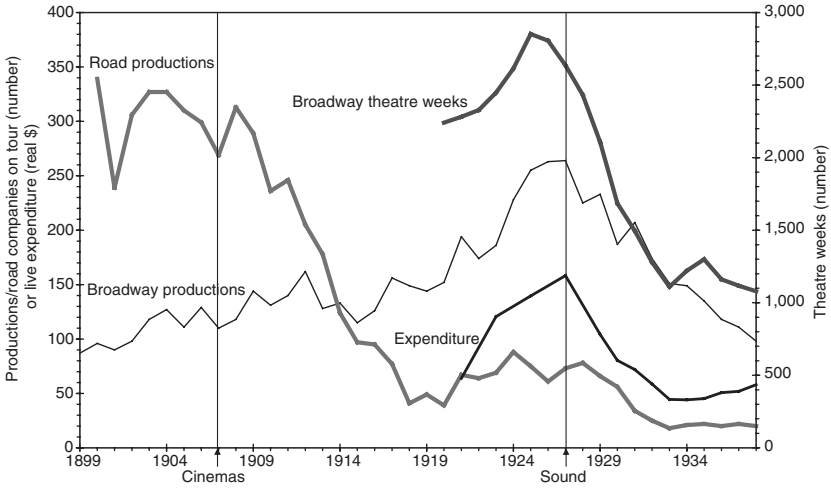

Figure 2.3 The number of road productions on tour in the US, Broadway productions and Broadway theatre weeks, 1899–1945

Note: Road productions: this is the average of the total number of companies on tour in April and in December, as listed in *Variety*.

Source: Bernheim (1932); McLaughlin (1974: 271–80).

Live entertainment production in the metropolises probably suffered less from the competition of cinema. The number of productions staged on Broadway in New York fluctuated considerably, but over all increased gradually from 1899 to 1926, with a limited dip between 1912 and 1916, possibly as a consequence of the emergence of larger cinemas and the feature film. Only when sound film was introduced did Broadway start to decline. The fact that this happened before 1929 confirms that the decline was caused by sound film, and not by the Depression.[70] Measured by a more reliable proxy, the number of theatre-weeks, the productions times the number of weeks each was staged, Broadway activity decreased even more sharply after the coming of sound.

Although Broadway was unique in the United States, it must have been similar to other large metropolises with a substantial up scale entertainment industry, such as Chicago or Los Angeles, and to a lesser extent to large cities in general, such as Boston, Philadelphia, New Orleans and San Francisco. Live entertainment in these cities was of such

[70] See also the expenditure data in the next two chapters.

quality that initially it could successfully compete with cinema. Further, the advantage of cinema in having virtually no transport costs, a reliable supply and the possibility of changing supplier more quickly, hardly mattered at all to the large entertainment centres. In these centres the only important things that affected competition between cinema and live entertainment were quality and price.

Thus a pattern emerged in which during a first industrialisation wave 'small-town' America, outside of the metropolises on the coast, substituted cinema for live entertainment, while the metropolises added cinema to the existing dishes of entertainment. In a second wave, which started with the introduction of sound, in the metropolises a large share of live entertainment production was replaced by filmed entertainment production, and outside these centres the few remaining live entertainment venues were increasingly dispensed with.

Theatres and vaudeville or music hall had a minimum efficient scale. When the city centres were fully served, new theatres or halls could be built in smaller markets, but these venues probably had a less optimal scale, implying diminishing returns to further investments. The minimum efficient scale of cinemas was smaller, and cinemas could be built without adding any creative inputs, resulting in increasing returns.[71] Besides this obvious difference, both live entertainment and cinema buildings were affected by both real estate costs and construction costs. The former would affect scale economies little as they decreased with potential market size: city centre locations were more expensive than locations in the suburbs. Because cinemas required less stage machinery and specialised stage equipment and architecture, their major costs were real estate costs. These would be smaller in smaller markets, such as the suburbs or small towns. Theatres and vaudeville, on the other hand, would have to invest in stages, the costs of which varied less with market size.

Britain

The changes in the organisation of the British entertainment industry look similar to those in the US. Few permanent theatre buildings were constructed before the nineteenth century. In London, for example, the entertainment capital of Britain, between 1660 and 1800 eight new theatres were built, or about one every seventeen years. As in the US, a separation of ownership of the theatre building and management of the

[71] Before sound, at least some musicians, a pianist or variety acts were added.

theatre company took place, mainly from the 1820s onwards.[72] In the provinces, after the 1843 deregulation, many stock companies emerged similar to the kind that existed in the US. These companies were resident in a town and attached to a specific theatre. They changed their repertoire almost weekly. In the 1860s, possibly slightly earlier than in the US, travelling companies with star actors started to replace resident companies, but resident companies seemed to hold out for longer than in the US.[73] By the late 1860s, 600 theatre companies travelled Britain, mainly on the railways.[74] By 1919, after cinema had firmly established itself, their number had dwindled to 250, employing 3,000 actors.[75] This was a substantially higher number than in the US at the time, suggesting cinema had a more limited effect on live entertainment in Britain.[76] During the 1920s and 1930s most of the remaining companies were swept into oblivion by cinema.[77]

As in the US, theatre circuits also emerged in Britain. In the early days, several circuits of independently owned theatres existed, such as Smedley's East Midlands circuit, which operated between 1812 and 1845, some venues of which were owned by Smedley himself, while others merely booked the acts through the circuit.[78] Towards the end of the nineteenth century, circuits became more and more owned by one company, and concentration of theatres and music halls increased. In the early 1900s, American financiers controlled about eight London theatres and were thought to be trying to organise a large trust along the lines of the Theatrical Trust in the US. Klaw & Erlanger, one of the three constituent firms of the US Theatrical Trust, also had plans to buy and control strings of theatres in England.[79]

In music hall, several chains existed, such as the Moss circuit and the Frece circuit.[80] Moss Empires Ltd. owned twenty music halls in 1900 and thirty-six by 1906, and was the forty-fourth largest British firm measured by capital in 1905.[81] In 1907, forty-two of the fifty-nine London music halls were owned by four companies.[82] By 1912, four circuits controlled a substantial part of the British entertainment business: Moss Empires; Variety Theatres Controlling Company, which controlled the Barrasford, Gibbons and Frece circuits; London Theatres of Varieties

[72] Davis (2000: 257). For contemporary research on theatre management, see Donohue (1971).
[73] Sanderson (1984: 23); Harrop (1992: 192–200).
[74] Davis (2000: 199, 316). See also Sanderson (1984: 23–4), which does not give the exact timing.
[75] *Ibid.*; see also Rowell and Jackson (1984).
[76] See also Chapter 11, on social savings. [77] Davis (2000: 217). [78] *Ibid.*: 177.
[79] *Ibid.*: 110–17. [80] *Ibid.*: 107. [81] *Ibid.*: 176–7. [82] *Ibid.*: 304.

Ltd., run by Walter Gibbons; Variety Theatres Consolidated, run by Gibbons and Oswald Stoll. As the names suggest, these four organisations were basically run as a trust, similar to the Theatrical Trust in the US. This trust controlled well over a hundred of the most important theatres in Britain.[83]

As in the US, reliable figures about the size of the industry are lacking in the nineteenth century. In 1866, a parliamentary committee stated that an incredible five thousand 'venues for drama' existed in Britain.[84] Many of these must have been community halls which could be occasionally used for drama. The limited liability legislation from 1862 made music hall into a big business. In the mid-1860s over thirty large halls existed in London with an average capitalisation of over £10,000 and an average seating capacity of 1,500. A further 200–300 small halls got by in London, and at least 300 provincial halls existed.[85]

In 1884, Michael Mulhall wrote that Great Britain counted 152 theatres, or 4.4 per million inhabitants, unfortunately without stating his source.[86] About the number of music halls, cider cellars and penny gaffs and other entertainment venues, less was known. More figures are available for London than for the rest of Britain. Mulhall stated in 1884 that the revenues of London theatres amounted to £1,320,000. In 1890, Mulhall writes that London theatres, twenty-five in total, had a yearly revenue of £1,860,000, yielding an average revenue of £74,400 per theatre or eight shillings (£0.40) per inhabitant.[87]

In 1892, a parliamentary committee attempted to estimate the size of the industry. It noted that 530 English towns possessed 1,300 places of amusement, accommodating more than one million people and representing some £6 million in capital. This included some 200 theatres, 160 music halls, and 950 'halls, gardens, galleries of various kinds'. About 350,000 workers were directly employed, and many more indirectly, about one-quarter of the number employed in the textile industry and double those engaged in public administration.[88]

After liberalisation, the construction of theatres, music halls and similar entertainment venues increased, although in the 1850s mainly the old buildings were rebuilt and enlarged.[89] The stock of newly constructed theatres in London rose sharply until the end of the nineteenth

[83] *Ibid.*: 269. See also Cheshire (1974). [84] Davis (2000: 199).
[85] Ehrlich (1986: 57).
[86] Mulhall (1884: 444); between 1800 and 1883 sixty-eight theatres had burnt down in Britain, 46 per cent of the 1883 stock.
[87] *Ibid.*; Mulhall (1909: 813).These figures roughly concur with Levi's (see below).
[88] Parliament (1892), as quoted in Ehrlich (1986). [89] Weightman (1992: 29).

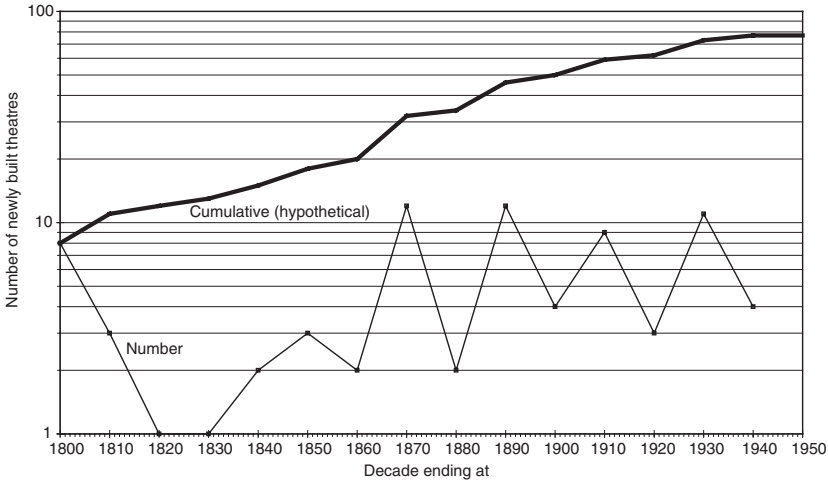

Figure 2.4 Number of newly constructed theatres in London per decade, and hypothetical cumulative, 1650–1950

Key: bold line – cumulative number (hypothetical); narrow line – number.
Note: The value for '1800' refers to all newly built theatres between 1650 and 1800. The cumulative is hypothetical and simply adds all the newly built theatres up to a specific date. It is ignorant of the possibility that some of those theatres may have been closed again.
Source: computed from Mander and Mitchenson (1963, 1968).

century (see figure 2.4).[90] Although this does not necessarily mean that attendance likewise increased, it is a good indication of the confidence that entrepreneurs had in the market for theatre. The figures understate the rise in confidence of the entrepreneurs because the seating capacity of the theatres that were built increased towards the end of the nineteenth century. Moreover, the largest rise in construction was probably in the music hall, which is not taken into account in this table. On the other hand, we should take into account the sharp rise in the population of London, from 2.4 million in 1851 to 4.5 million in 1901.[91]

Likewise, the investment in music halls showed a sharp increase towards the end of the nineteenth century. Detailed research by Andrew Crowhurst on company registrations at the Board of Trade,[92] suggests that the total stock of invested capital increased from about £24,000 in 1860 to a high of £2 million in 1898, after which the stock remained

[90] Although some theatres would become music halls, figure 2.4 does not include the latter's construction, which probably showed an even sharper increase. See also Hugh Maguire (1992).
[91] Bédarida (1976: 20). [92] Crowhurst (1992).

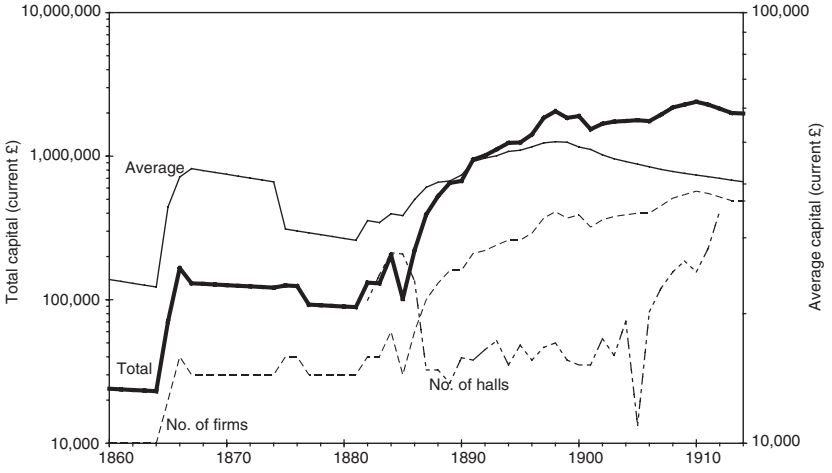

Figure 2.5 Capital stock invested in music hall companies, total and average per music hall company, 1860–1912, in current pounds
Note: The number of halls is compiled by Crowhurst from a different source, and may not be comparable to the capital data.
Source: Crowhurst (1991).

more or less stable (figure 2.5). The decline in the average capital per music hall company suggests that after the peak, further investments reached diminishing returns and were in lower-capacity music halls in smaller towns or suburbs. One could argue that when music hall had also served these marginal spots, cinema technology was needed to serve even more marginal locations where music halls would be unprofitable.

The number of music halls in operation, compiled by Crowhurst from a different source, the *Era Almanac*, shows a sharp rise and fall during the 1880s, which could partially be due to inadequacy of the source. After 1888, the number of halls remains more stable, while during the 1900s, at the same time as cinema emerges, the number grows sharply, although the new halls must have been smaller, given the drop in total capital invested.

Figures for London, from the London County Council, differ from Mulhall's figures mentioned above, possibly because they cover a wider area (table 2.2), although the County of London itself again was smaller than the total built-up area.[93] In 1890, a total of 115,000 theatre and music hall seats existed in London, which over the next twenty years

[93] See also Weightman (1992: 137).

Table 2.2 *Number of theatres, music halls and cinemas in London, 1891–1929*

Year		1891	1911	1929
Theatres:				
Number		49	54	
Capacity	Average	1,338	1,244	
	Total	65,550	67,187	
Music halls:				
Number		42	50	
Capacity	Average	1,190	1,473	
	Total	50,000	73,670	
Theatres and music halls (total):				
Number		91	104	87
Capacity	Average	1,270	1,354	1,460
	Total	115,550	140,857	127,000
Cinemas:				
Number			94	257
Capacity	Average		587	1,339
	Total		55,149	344,000

Source: New survey of London life and labour (1930), Vol. IX, p. 295.

grew to 150,000.[94] Although the first London cinema was constructed only in 1905,[95] by 1911 55,000 cinema seats existed, spread over 94 cinemas. Their average seating capacity was less than half that of music halls and theatres, possibly because their minimum efficient scale was smaller as cinemas had to sink little money into staging productions. It is also possible that some cinemas settled in suburbs too small to suffer competition from music halls and theatres. Further, pioneering cinema entrepreneurs may have found it difficult to obtain sufficient capital to set up huge cinemas, and projection technology might have made capacities above 1,000 difficult to achieve before 1910.

However, in 1929 cinemas had reached nearly the same average capacity as music halls and theatres. At that time, figures are substantially less representative for all of Britain, as the West End in London had

[94] An 1865 survey counted 23 London theatres with 38,000 seats, yielding an average capacity of 1,652 seats, and 41 concert and music halls with 179,300 seats, yielding an average capacity of 4,373 seats (Davis 2000: 76). These figures were estimates and may not be reliable. The latter figure appears hardly possible, technologically; it is not consistent with the 1891 figures, even if a few large concert halls were excluded.

[95] Weightman (1992: 41).

become the film centre of the nation, with many large and luxury picture theatres, for first nights and first runs. These cinemas, often with capacities considerably above those of the largest theatres and music halls, push the average seating capacity up, while in the suburbs and outskirts cinemas' seating capacities were probably substantially lower than those of theatres.

The figures also show that in London, live entertainment production did not decrease much because of the competition of cinema. In all, it lost just 12,000 seats between 1911 and 1929, an average decrease of 0.6% per year, while cinema seats grew in the same period, at 10.7% a year. This fits the pattern observed in the United States, where live entertainment in the provincial part of the country suffered first from the competition of cinema, while live entertainment in the metropolises held out until the advent of sound. Comparable figures for all of Britain would be needed to confirm this, and these are unfortunately lacking. In 1912, in all of Britain 391 music halls existed (of which 50 were in London) but the seating capacities of the halls outside of London are unknown.[96]

On a somewhat smaller scale a similar development took place within theatre and music hall between 1891 and 1911. While numbers of theatre seats barely grew, only 0.1% a year, music hall seats grew twenty times as fast, at 2.0% a year, taking most of the growth of the market. Over the whole period between 1891 and 1929, all entertainment seats taken together grew 3.8% a year on average. This remarkable prolonged year-on-year growth, spanning thirty-eight years, would not have been possible without cinema technology.

In London the consumption of entertainment must have grown substantially, and cinemas took most of the growth. Live entertainment differentiated itself increasingly by providing a different, slightly more classy product for its higher prices, leaving the cheap popular entertainment and melodrama to cinema.[97]

France

In France, as in the US and Britain, three important changes in the organisation of entertainment production took place during the nineteenth century: the increasing importance of fixed theatre buildings, the emergence of theatre circuits, and the rise of travelling companies. First, during the years from the Revolution to the early twentieth century, live

[96] Davis (2000: 59). [97] See, for example, Trewin (1976).

entertainment gradually changed from an activity that was largely mobile, carried out in the open air or in temporary booths or tents in fairgrounds and at fairs, into an activity that was increasingly carried out from fixed buildings.[98] In the early nineteenth century, the official, elite, legitimate theatre was mainly performed in fixed buildings – and then only in Paris and the provincial capitals. In Paris, the Boulevard du Temple had many kinds of entertainments performed in the open air, in tents or other temporary structures. By the middle of the century, most of these had disappeared and given way to fixed structures.[99]

The provincial cities generally had only one theatre building, if any, which in the course of the year would offer most kinds of entertainment. In the early nineteenth century, only Bordeaux and Lyon had a second theatre building, in which more popular repertoires were performed. From the reregulation in 1807 to the middle of the century, between ten and twenty licences were given for new theatres, often in the smaller provincial cities. These venues were generally organised as Sociétés Anonymes, joint-stock companies. The shareholders usually consisted of persons from the local elite, although exceptions existed. King Louis Philippe, for example, took a 500-franc share in the theatre in Romorantin.[100] The number of shareholders varied from 11 in Le Havre to 148 in Saint-Amand (table 2.3). The capital of the theatres varied between 18,000 and 154,000 francs, with an average just below 60,000 francs. Although systematic data are lacking, the acquisition price and capital of Théâtre Feydau in Paris (table 2.3), and the comparative Paris and provincial revenues,[101] suggest that the capital of the smaller provincial theatres was far more than an order of magnitude below that of the Paris theatres.

Many small towns without theatres were visited by saltimbanques, travelling artistes, who often co-ordinated their travel with travelling fairs. Their journeys were highly regulated, as they needed a special passport from their official residence, with a declaration of good moral standing from the police.[102] Only by 1880 did every fairground theatre have the right to operate freely throughout France.[103]

In the last two decades of the nineteenth century, the mobile character of entertainment came back in the form of mobile theatres. Travelling

[98] On travelling theatre groups in early eighteenth century France see Guardenti (1995: 1–51).
[99] McCormick (1993). [100] Archives Nationales, F/12/6832.
[101] See the annual revenue figures discussed below.
[102] McCormick (1993: 66–8); cf. Hemmings (1994: 137–59).
[103] McCormick (1993: 68).

Table 2.3 *Capital for selected new French theatre firms, 1792–1845*

Year	Place	Venue	Capital (francs)		Number of shareholders	Corporate form	Duration (years)
			Current	Real			
1792	Paris	Theatre	1,400,000				
1795	Paris	Theatre	6,000,000		60		
1810	Niort	Salle de Spectacle	42,894		30	Société Anonyme	
1810	Sedan	Theatre	56,000		106	Société Anonyme	
1812	Mans	Salle de Spectacle			68		
1822	Perpignan	Theatre	27,500	27,500		Société Anonyme	5.5
1826	Laval	Salle de Spectacle			25		
1829	Brest	Theatre	45,000	40,617		Société Anonyme	
1833	Boulogne	Theatre	20,000	19,485			
1836	Havre	Salle de Bals et Concerts	154,000	145,640	11	Société Anonyme	–
1837	Romorantin	Salle de Spectacle	53,500	54,565	98		50.0
1839	De Morlaix	Salle de Spectacle	18,000	18,380			99.0
1842	Saint-Amand	Theatre	38,000	37,273	148	Société Anonyme	60.0
1844	La Rochelle	Theatre	120,000	125,625	129	Société Anonyme	40.0
1845	Lous-le-Saunier	Rights for shop rents			71	Société Anonyme	80.0
1810–1845	Average above provincial theatres		57,489	58,635	76		56
	Standard deviation		42,253	46,067	45		30
	Coefficient of variation		0.73	0.79	0.59		0.53

Notes: Real francs are deflated to francs of 1822, GDP-deflated using the deflator inferred from Mitchell's (2003: 905) GDP-series.
The coefficient of variation is the standard deviation over the average.
1792, 1795 entries are Théâtre Feydeau; 1792 value is sales price of theatre. Niort: 28,200 francs in shares, the rest was loaned by shareholders proportionally to their shares.
Laval: construction firm: city would buy ownership of the theatre as soon as it was ready.
Romorantin: includes public baths; city takes 6,000 francs share in return for 250 free baths for the poor people per year.
De Morlaix: subscribed capital was only 9,000 francs, but could be increased later to 18,000, if desired.
Source: Archives Nationales, boxes F/12/6832, F12/6794.

troupes operated large, easily dismantled theatres, which often contained boxes and galleries, and sometimes as many as 800 seats. These were dragged along from town to town, village to village, by horses, steam engines or the railway.[104]

At the same time, minuscule travelling puppet theatres also became more common. In economic terms, this led to an increase in the market size for theatre productions, as additional revenue could be captured from sending puppet shows to those parts of the country that would not warrant the sending of an expensive company of actors. Verne's *Le Tour du Monde en 80 jours*, for example, became a very popular travelling puppet production. In technological terms, the actors were automated away by the puppets. Not surprisingly, then, when cinema came along, several travelling puppet masters replaced their puppet shows by the cinematograph.[105]

Thus, at the end of the century, four different 'runs' of a theatre play existed to serve the market fully, based more on geographical concentration of consumers, than on price discrimination, as cinema would later be. Paris, and a few other cities, had theatres with resident actors and were the origin of new plays. Travelling theatre companies visited the theatres of the larger provincial cities, travelling companies with mobile theatres served the cities that had no theatres of their own, and, finally, puppet masters and other small-scale entertainments visited the areas with markets so small that they became unattractive for mobile theatres.

The second development in the organisation of entertainment production, taking place from the 1850s onwards, was the formation of theatre chains or circuits. Several entrepreneurs started acquiring multiple theatres and other entertainment venues, and often managed them as an integrated business, by establishing standardised programs and contracting stars who rotated between the venues. In 1851, for example, the family Larochelle owned several theatres in and around Paris. Larochelle, the owner-manager, formed four groups of actors, which he moved from theatre to theatre, often daily, and sometimes even in the course of one evening.[106]

Third, somewhat parallel to the emergence of circuits described above, provincial theatres also came to depend on rotating stars. Before 1850, as in the US and Britain, the major towns had predominantly resident stock companies, which could perform a stock of plays, and could change or alternate their repertoire weekly, or faster if necessary. Smaller towns were served by the companies operating from the major

[104] *Ibid.*: 69. [105] *Ibid.*: 70. [106] *Ibid.*: 48–50.

towns. In early 1825, only eighteen provincial towns had a resident company.[107]

From the mid-century onwards, as railways came to serve all of France, most resident companies disappeared and were replaced by travelling companies operating from Paris, which performed the same play in many different cities. If a play was a success in Paris, the theatre manager would immediately assemble several companies to send it out to the provinces.[108] In Britain and the US the same happened at about the same time.

The result was that the capital became the place where nearly all the new entertainment productions were created and tried out, before being spread to the rest of the country. Before, the provincial theatres had had more autonomy, as the resident companies could try local plays and give their own interpretations to existing plays.

A petition filed by the Paris theatres in 1848 gives some insight into the financial side of the business for five venues (table 2.4).[109] The Gaité was a large theatre in the city centre, the Lazari a relatively small theatre in the centre, while the Monmartre, the Belleville and the Batignolles formed a circuit in the suburbs, and were centrally managed. A large part of employment, from half to three-quarters, consisted of creative inputs. The large theatre had relatively more creative inputs than the smaller four. The number of practical persons in each of the smaller four theatres was about the same. Since the theatres were about the same size, this suggests that the number of practical workers was more or less exogenously driven, depending on the size of the theatre. Even so, costs per employee and costs per creative input were roughly the same for the four smaller theatres. The circuit seems to have made some cost savings by having relatively fewer actors and musicians than the other theatres. It used to rotate its creative inputs among its theatres, sometimes on the same evening, and co-ordinated the opening and closing days of its theatres to maximise the rents it could capture from its creative inputs.[110]

[107] Groups from central cities served the smaller towns of a 'theatrical département', of which France counted twenty-five. They were obliged to visit each town once every six months for at least fifteen performances. In the late 1820s every arrondissement had one or two travelling companies, the ancestors of the *theatre ambulant* that lasted until the 1940s. Many were family businesses that had to improvise with scenery and costumes. Other troupes visited the smallest towns and those not included in any département (McCormick 1993: 54–6).

[108] Hobson (1978).

[109] 'Subvention extraordinaire aux théâtres de Paris et de la banlieu, Decret du 17 juillet 1848', Archives Nationales F/21/1042, quoted in McCormick (1993: 91).

[110] *Ibid.*

Table 2.4 *Organisation and costs of three Paris theatre management companies, 1848*

	Number of employees			% of all employees		
	Gaité	Lazari	Circuit	Gaité	Lazari	Circuit
Creative inputs:						
Actors	56	18	29	34	40	24
Musicians	18	5	8	11	11	7
Other	54	0	17	32	0	14
All creative inputs	128	23	54	77	51	45
Management	2	1	3	1	2	3
Practical workers	37	21	62	22	47	52
Total	167	45	119	100	100	100
Employees/theatre	167	45	40			
Practical/theatre	37	21	21			
Costs and wages (francs):						
Total costs	432,000	43,609	107,496			
Cost/theatre	432,000	43,609	35,832			
Total wages			47,016			
Cost/employee	2,587	969	903			
Wages/employee			395			
Cost/creative input	3,375	1,896	1,991			
Subsidy received 1848	25,000	4,000	25,000			

Note: 'Circuit' refers to three theatres in the Parisian suburbs, managed as a circuit by one company. The theatres were the Monmartre, the Belleville and the Batignolles.
Source: Compiled and computed from Ch. XVI, 'Subvention extraordinaire aux theatres de Paris et de la banlieu, Decret du 17 juillet 1848', Archives Nationales, F/21/1042, as quoted in McCormick (1993: 91).

Few quantitative indicators exist for live entertainment production in France during the nineteenth century. One indicator is the revenue of Paris theatres, which does not necessarily reflect theatrical activity for all of France. Figures on the revenues of all Paris entertainment venues in 1817–18 show that the city's 11 theatres had a total revenue of 5.2 million francs, while the 179 other entertainment venues, varying from *bals*, *petit spectacles* and *curiosités* to *cafés a soirées amusantes*, had combined revenues of 0.65 million francs, only 11 per cent of all entertainment revenues.[111] These figures show the economic dominance of theatrical entertainment over other, often more traditional and less formalised forms of entertainment.

[111] Le Roy (1990: 342–3).

Table 2.5 *Entertainment performances in France, except Paris, 1815–1816, by type*

	1815		1816	
	No.	%	No.	%
Opéras-comiques	10,261	45	11,009	48
Vaudevilles	5,884	26	6,129	27
Tragédies and comédies	4,809	21	4,236	18
Grand opéras and ballets	1,116	5	1,023	4
Mélodrames and pantomimes	730	3	649	3
Total	22,800	100	23,046	100

Source: de Pixerécourt (1818), as quoted in McCormick (1993: 165).

The figures also support the notion that during the nineteenth century theatre industrialised live entertainment. The eleven theatres were large, highly organised undertakings, employing many people and had an average annual revenue of 475,000 francs per theatre. The scale of the multitude of other, less organised, entertainments was several orders of magnitude smaller, with average revenue amounting to only 3,600 francs a year.[112]

Evidence on the number of performances in 'provincial France', outside of Paris, is also available, although revenue figures are lacking (table 2.5). Popularity differed substantially between genres.[113] The opéra-comique was the most popular genre, followed by vaudeville. The reason why melodramas held such a low percentage was the scarcity of stage time; most provincial cities had only one theatre, in which the most classy entertainment was performed. Cities with a second theatre often used this to stage more melodramas. Productions without a substantial musical part – the tragedies, comedies and melodramas – accounted for only a quarter of all performances.[114]

Available figures suggest that throughout the nineteenth century, the share of theatre in all entertainment revenues declined. While in 1817–18 it accounted for 89% of entertainment revenues, in 1877, theatre tax

[112] Computed from *Ibid.*

[113] Pixerécourt (1818) defended the melodrama, which had come under attack for its vulgarity. He wanted to show that melodramas were only a small part of all entertainment staged.

[114] In Paris, the mix of genres probably differed, as stage time was more abundant than in the provinces. Besides official legitimate theatres, it had several which played popular repertoires and gave the melodrama a better chance.

revenue constituted 69% of the taxes paid by Paris entertainment venues to the Assistance Publique. Since taxes often were lower for theatre than for other venues, their share in revenue may have been understated in the tax data. In 1912, theatres' share of tax revenue, excluding taxes paid by cinemas, was 63%. By 1925 it had fallen to 52.4%.[115] At the same time, tax revenues from a new form of theatrical entertainment, music hall, increased sharply, from 3% in 1877 to 14% in 1912, to 16% in 1925, making up largely for the decline in theatre revenues.[116]

The revenue of Paris theatres grew steadily during the second half of the nineteenth century. Between 1850 and 1867, growth in annual revenues averaged 5.6% a year, in current francs. Between 1867 and 1889, growth slowed to 2.4% a year. In the latter year, the four largest theatres, the Opéra, the Hippodrome, the Français and the Comique, received over a third of all revenues. The number of employed actors that year was 3,200, yielding an average revenue per actor of 400 British pounds.[117] This figure was substantially lower than in London, where revenue per actor (or actress) amounted to about £634 in 1891.[118]

In 1890, Paris had 32,000 inhabitants for every theatre, compared to, for example, 115,000 inhabitants per theatre in London and 81,000 in Berlin. Of major European cities, only Rome, with 31,000 inhabitants per theatre; Florence, with 15,000; and Geneva, with 26,000, had a higher density of theatres. Another large French city, Bordeaux, counted 82,000 inhabitants per theatre.[119]

Dominique le Roy has calculated long-term growth rates of Paris entertainment tax revenues for different kinds of entertainments. His findings show an average annual growth rate for theatres of 1.7% between 1829 and 1923. For circuses the figure was 1.2% for the period between 1828 and 1925; for dance venues, 2.8% between 1832 and 1925; for concerts and cafés-concerts, 4.8% between 1853 and 1925; for music halls, 6.4% between 1872 and 1925. Total 'droit des pauvres' entertainment tax revenue grew at 2.9% annually between 1820 and 1925.[120]

For all of France, less information exists about industry output. In 1849, France had 361 theatres, and in 1918 about the same number, 357.[121] However, it is unclear what the evolution was in the seventy

[115] These are shares of all entertainment tax revenues excluding those paid by cinemas (*Ibid.*: 166).
[116] *Ibid.* [117] Mulhall (1909: 813).
[118] Calculated from 1890 London theatres revenues (*Ibid.*), divided by the London actors given in the 1891 census (p. 9). London counted 1,664 actresses versus 1,271 actors.
[119] Mulhall (1909: 813). [120] Le Roy (1990: 168). [121] *Ibid.*: 158.

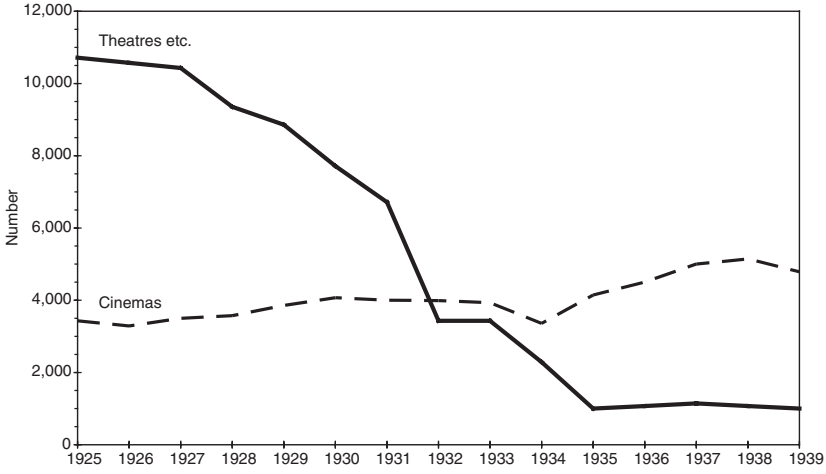

Figure 2.6 The number of cinemas and live entertainment venues in France during the transition to sound, 1925–1939
Note: Theatres etc. = theatres, concerts, circuses, *bals forains* (travelling live entertainment). Theatres were probably a small minority of this number.
Source: Forest (1995: 52).

years between these two dates, and what the numbers would be for music halls and cafés-concerts. In Germany, for example, the number of theatres tripled between 1870 and 1896, from 200 to 600; it is hard to believe that the number of theatres in France remained static in the same period.[122] It is possible that the number of theatres increased steadily towards the end of the century, and afterwards declined because of competition from music halls, cafés-concerts and cinemas.[123]

From the mid-1920s onwards figures are available on the total number of live entertainment venues in France, which included theatres (figure 2.6).[124] They show a sharp decline in the number of live entertainment venues when sound film became widely adopted in France, a few years later than in the US, around 1929–30. Since this coincided with the Depression it is difficult to separate out the talkies' effect on live entertainment. A further complication is that the category 'Theatres etc.' is an aggregate, and it is possible that it was not the theatres that declined so much, but other forms within the category. The number of

[122] Jelavich (1985: 102), as quoted in Hobsbawm (1987: 221).
[123] This is supported by the increasing share of music hall and cafés-concerts in entertainment tax revenue between 1877 and 1925, noted above.
[124] Forest (1995: 52).

music halls, which were not included, remained more or less stable throughout this period. A fourth category, which included 'dancings', declined from 501 in 1925 to 85 in 1939.[125] The number of cinemas did not increase much, but with the arrival of the talkies many small cinemas that could not bear the fixed cost of sound equipment gave way to venues with a far larger capacity. This is confirmed by the sharp rise of national consumer expenditure on cinema from 1926 onwards, overtaking live entertainment in 1931, the year in which the number of venues declined most abruptly.[126] Live entertainment revenue, however, only started to decline sharply from 1929 onwards. The initial increase in cinema expenditure thus had little to do with sound films or the Depression. Only after 1929 did the latter two bring about a process of substitution.

Process and product innovations

Besides the changes in industry structure, many of which could be called organisational innovations, other innovations played a crucial role in fostering the growth and productivity of the industry during the nineteenth century: process innovations increasing the distribution delivery system's capacity and product innovations enhancing the quality of performances.

Process innovations

The major process innovation was the change in theatre architecture. While American theatres in the late eighteenth century seated on average about 300–400 people, and the largest theatres just over a thousand, in the early nineteenth century new theatre designs with steel frames were used which allowed larger seating capacities on the same space, because they enabled the building of more storeys.[127] This process innovation also resulted in a market innovation. Theatres used increased price discrimination to fill the larger capacities. The extra galleries in the new theatres had inexpensive seats for the popular classes. The price of the cheapest tickets declined, from about 50 cents to between 12 and 25 cents, for the theatres in the major cities and the price of the most expensive seats often increased.[128] This architectural innovation and business innovation increased the productivity of the theatre building,

[125] *Ibid.* [126] See the next chapter.
[127] Bernheim (1932: 8); Henderson (1998).
[128] Bernheim (1932: 24); McConachie (1990: 50).

by raising the number of spectator-hours it produced during a given time span.[129]

In Britain, during the nineteenth century theatre and music hall capacity gradually increased, as architectural innovations made it possible to add extra galleries. From the 1850s onwards, although sizes varied, the large music halls could often seat 1,500–2,000 persons. Of four major music halls built in London between 1860 and 1862, for example, capacities were 600, 800, 1,500 and 1,900.[130] In the 1880s, many of the smaller music halls in London's West End were closed down and replaced by large variety theatres. The chairs and tables of the smaller halls often gave way to fixed seats without tables, which allowed higher capacity per square foot.[131] As in the US, higher capacities went hand in hand with increased price differentiation. Between the 1830s and 1890s, the theatres added many more expensive and comfortable seats to attract a middle class audience, while at the same time offering cheaper gallery tickets.[132]

In France, theatre size increased substantially as well. In the first half of the century, for example, the fourth gallery became important. This had many cheap seats for the lower classes, while also more expensive seats and 'boxes' were added.[133]

Besides changes in architecture, other technological innovations were important, such as lighting. During the first part of the nineteenth century gas lighting was widely used, and theatres were among the most important customers of city gas distributors. Towards the end of the century, theatres were among the first to switch to electric lighting.[134]

Product innovations

The bulk of innovations took place in the production of the performances which the theatre buildings turned out. Many improvements

[129] Throughout this work, the 'spectator-hour' is used to measure output, which is one spectator (or an empty seat) who watches entertainment for one hour. For example, a 500-seat theatre has a production capacity of 500 spectator-hours per hour. If 400 persons attended a performance of an hour, the theatre produced 500 spectator-hours, of which 80 per cent was sold. The remaining 100 spectator-hours perished and could never be recovered again (see also Chapter 11).

[130] Weightman (1992: 108).

[131] *Ibid.*: 120. A descriptive account of some music halls outside of London is Campagnacard and Russell (1900).

[132] Weightman (1992: 105).

[133] McCormick (1993). See also Hemmings (1994: 34).

[134] Rees (1978); Davis (2000: 310–11).

occurred in the physical staging of performances: costumes became more elaborate, lavish, and expensive and sets more spectacular. Trick machinery was introduced. Some mechanisms enabled actors to sink through the ground, or horses to continuously gallop on the same spot on stage. New special effects were tried out, using light, smoke, or specially developed sound instruments, to simulate, for example, a thunderstorm.[135] Purpose-built stage-lifts and rotating stages allowed a fast change of sets and thus substantially increased product quality.[136]

In Britain, production innovations involving complicated machinery proliferated.[137] In the early nineteenth century several theatres produced spectacles with live horses running on stage, sometimes using a steam-driven line to keep the galloping horse in one place.[138] For the popular melodrama *The Miller and his Man*, of 1813, a mill was exploded on stage.[139] Many years later, in 1900, the London Hippodrome staged spectacles using its enormous water tank, such as the melodrama *The Typhoon*.[140] During the last half of the nineteenth century, British theatres contracted out a lot of production services to specialised companies.[141] These activities, such as scene painting, set making, costumes and stage properties, were formerly done inside the theatres themselves. Tracy Davis argues that outsourcing allowed theatres to use a smaller surface for production and a larger surface for seats. Since most theatres were located on prime real estate, an efficient use of space was important.[142]

In France, innovations were introduced that made stage productions more lavish and expensive. More money was spent on sets, on background painting, on music, on lighting, on special effects. Trick mechanisms were used to let actors enter the stage from out of the floor or the sky. In the 1830s, a Paris theatre adopted a new innovation from the British stage, the 'vampire trap', a device which made it appear as if an actor had vanished into a wall.[143] An important innovation of the 1840s was the darkening of the auditorium, highlighting what happened on stage. It was used, for example, in the staging of *Monte Cristo*.[144] In 1861, just one scene of an opium den in the spectacular military drama *La Prise de Peking* cost 40,000 francs to stage. Another expensive scene

[135] Henderson (1998); Vardac (1949). [136] Londré and Watermeier (2000).
[137] See, for example, Booth (1981a).
[138] Speaight (1984); cf. Weightman (1992: 68, 72–3). [139] *Ibid.*: 55–6.
[140] *Ibid.*: 74. [141] Booth (1981b). [142] Davis (2000: 319).
[143] The system contained many small parts, pressed forward by strings, which together formed the wall. McCormick (1993: 153).
[144] *Ibid.*: 213.

contained a huge luminescent, radiating river, which consisted of thousands of small pieces of mirror glass.[145] The adaptation from Verne's *Michel Strogoff* cost 300,000 francs to stage, excluding the cost of closing the theatre for a month to construct the elaborate set.[146] The emphasis in stage productions was increasingly on visual effects, either by having sets resembling the real world as perfectly as possible, or by creating glamorous and dazzling fantasy worlds, such as happened in the féerie. This development foreshadowed the advent of cinema.[147]

Besides the physical staging, a marked shift took place in the more abstract part of the production of performances. The script of the play became more and more important, and with copyright establishing itself during the nineteenth century, professional playwrights received ever higher fees.[148] The 1856 US copyright act merely provided for registration of works in the local courts and failed to give effective protection. The situation was improved in 1870 by the transfer of registration to the Library of Congress and in 1891 by the US acceptance of the International Copyright Agreement.[149] Before copyright protection, writers had little incentive to spend long hours on high-quality plays, as others could reap all the benefits. With better copyright legislation, a sharp increase in quality and payment for scripts took place, although it is of course possible that causation at least partially ran in the other direction. The product innovation here was that the quality of the play was markedly improved by paying the best talent, and being able to legally protect the investment. This meant that instead of many ordinary writers, fewer but better playwrights could emerge, increasing the quality of stage plays.[150] While in the 1830s, $100 to $300 was a normal price for a good play, in the 1870s Clyde Fitch received $175,000 for *Arizona*, and Augustus Thomas $300,000 for *The Lion and the Mouse*. By the end of the century, several playwrights had become

[145] *Ibid.*: 191–2. [146] *Ibid.*: 193.

[147] *Ibid.*: 144. Visual effects became more pronounced towards the end of the nineteenth century. The use of trick properties and mechanisms rose, thus 'creating a fantasy world in which nothing is stable'. As McCormick (1993: 152–4) writes, with the féerie, 'audiences had become to expect much use of machinery, transformations, trick properties and all the effects of magic. ... Clever scenic effects were above all what the audience of féeries wanted. The sense of wonder had to be stimulated. While the melodrama was pushing increasingly towards accurate imitation of real life, the féerie had to make audiences believe in what they knew to be patently untrue and divorced from real life. Audiences wanted to be deceived by tricks and the clever works of the machinistes made sure they were. For this reason, theatres regarded good machinistes as being worth their weight in gold.'

[148] Davis (1998); Richardson (1998). [149] Brockett and Hildy (2003: 345).

[150] The increasing income inequality among creative inputs is examined in Chapter 8.

millionaires.[151] Similarly, star actors and actresses were paid higher fees and more costs were sunk in publicising the play and its stars.[152]

The consequence of the increased emphasis on new and original plays was that the investment per theatre production increased substantially. This was largely an endogenous sunk cost, as it was not dictated by technology but decided upon by the producer, and it could only be recovered through selling tickets: the resale value of inputs would be negligible.[153] The increased investment could be recouped because theatres had become larger and because productions ran for more performances. This latter increase was achieved in two ways: by a longer run in a particular theatre, and by sending the company out to the country after the first run at that theatre, or by sending duplicate companies out while the play was still in its first run.

The longer run was made possible by more theatres and fewer productions. Before 1850, plays were performed usually no more than fifteen times and then put in repertory in alternation with other plays. In the 1852–53 season *Uncle Tom's Cabin* broke this pattern with over 300 consecutive performances and after that runs became longer. In the 1860s, the average run for plays in the Boston Museum was fourteen to forty performances. By the 1870s this had increased to between twenty and fifty, and by the 1880s to between fifty and a hundred. The number of plays performed in the theatre decreased at the same time from 140 in 1852 to 75 in 1875, to 15 by 1893. At Wallack's Theatre in New York, the annual number of plays performed fell from 60 in 1855, to between 15 and 25 in the mid-1870s and only 5 to 10 by the mid-1880s.[154] In the twentieth century, runs would increase even further in length, with the play *Tobacco Road* (1933) running for seven consecutive years.[155]

The second way to increase performances per production, the sending out of duplicate companies, was made possible by falling transport costs because of the railway and by the establishment of copyright, which prevented imitation by competing companies. In the 1870s, about fifty travelling companies were performing *Uncle Tom's Cabin*.[156] After achieving an initial run of 486 performances in New York between 1878 and 1880, the play *Hazel Kirk* was taken on the road. By 1884 fourteen different travelling companies were performing it, about 6 per cent of all travelling companies at that time.[157]

[151] Poggi (1968: 247–9). [152] McArthur (1984).
[153] On sunk costs see Chapter 6. [154] Brockett and Hildy (2003: 343). [155] *Ibid.*: 463.
[156] By 1927 twelve touring companies, 17 per cent of the total, were still performing this play (*Ibid.*: 344).
[157] *Ibid.*: 348.

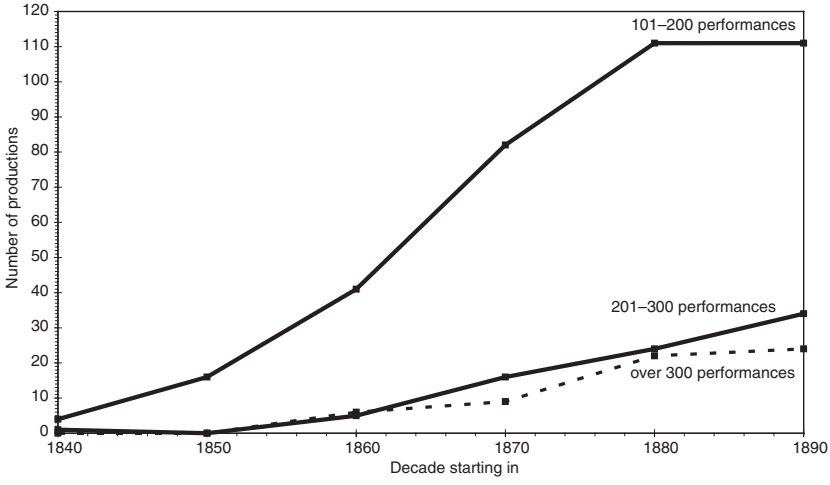

Figure 2.7 The number of West End productions with over 100 performances, 1840–1900, per decade
Source: computed from Pick (1985: 5).

In Britain increased costs were also recouped by the increase in the number of performances per play during the second half of the nineteenth century. While before 1850, plays changed frequently and a hundred consecutive nights was considered a long run, from the 1860s the length of run started to increase. The popular melodrama *The Ticket of Leave Man*, for example, had a first run of 407 nights. By 1916, runs had lengthened still further, and the hit musical *Chu Chin Chow* reached a total of 2,238 performances.[158] Output was boosted even more by sending duplicate companies out to the provinces, a practice that became widespread from the 1880s onwards.[159]

The increase in the length of run is confirmed by John Pick's research on West End theatre runs (figure 2.7).[160] The number of productions with over 100 performances in the West End grew from 5 in the 1840s to 169 in the 1890s, an annual average increase of 6.0 per cent. Since these figures are for the West End only, and do not capture the provincial tours by duplicate or original companies, they probably understate the real increase in performances.

In France, increasing costs were recouped by an increase in the length of run as well. Until the 1830s, successful plays were counted in the tens of performances, although a few exceptions existed. A highly successful

[158] Weightman (1992: 192–230). [159] Sanderson (1984: 23). [160] Pick (1985: 5).

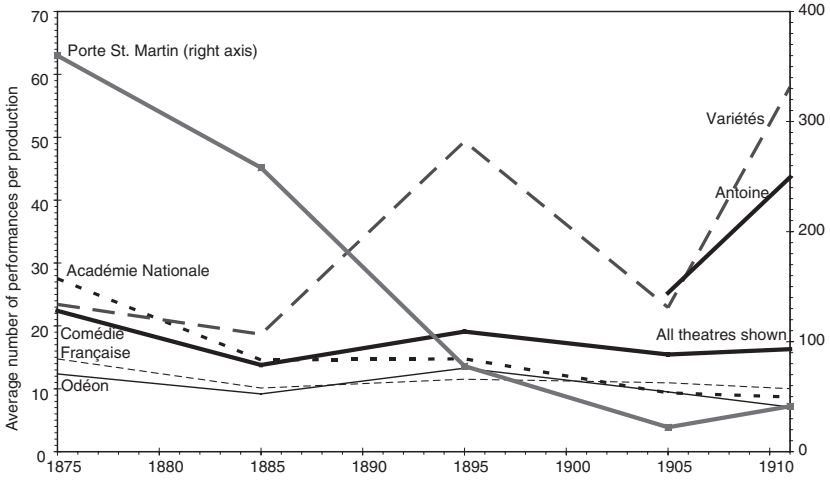

Figure 2.8 Average length of run of productions at selected Paris theatres, in number of performances per production, 1875–1911

Note: The years 1875, 1885, 1895, 1905 and 1911 are taken. Only productions of three acts or more have been included. Productions first staged after 31 October of each year have not been included.

Source: Compiled from the respective annual issues of Stoulig, *Annales de théatres et de la musique* (Paris, 1875–1911).

vaudeville show, *Madame Angot au Sérail in Constantinople*, which opened in 1800, made about 200 performances during its revival in 1803, and a successful féerie, *Le Petit Poucet, ou L'Orphelin de la Forêt*, had a run of 230 performances, in just one theatre in 1801.[161] During the nineteenth century the length of runs increased. The drama *La Prise de Peking* (1861), mentioned above, was a large hit, running to 300 performances in Paris, and another 100 two years later, when it was restaged.[162] An important watershed was the deregulation of 1864, after which the average length of run increased sharply.[163] In the 1870s, plays began to average thirty to forty performances, and successful pieces often ran into the hundreds.[164]

As production costs and length of run increased, managers were careful not to stage too risky plays, either in innovativeness or in censorship potential, because the play represented a substantial investment. More risky plays were increasingly performed at the subsidised theatres, which were less dependent on box office revenue.[165]

[161] McCormick (1993: 117, 150). [162] *Ibid.*: 191–2.
[163] *Ibid.*: 77. [164] *Ibid.*: 52. [165] *Ibid.*: 100.

Nevertheless, for a few selected Paris theatres, the development of the length of run from the 1870s onwards was mixed (figure 2.8). They were just a small part of all theatres in Paris, and they were probably not representative of what happened to length of run in Paris theatres as a whole. For the selected theatres combined, the average length-of-run per production remained more or less the same. The figures also suggest that for the large, heavily subsidised theatres, which staged high-class entertainment, such as the Comédie Française and the Odéon, the length of run remained the same or decreased somewhat, while for the theatres that staged the more popular fare, such as the Porte St. Martin, the Théâtre des Variétés and Théâtre Antoine, it fluctuated greatly between years.[166] A larger difference between hits and misses may have existed in these popular theatres. Between 1905 and 1911, the years in which the film industry took off, average length of run in all the three latter theatres increased again.

Employment

This section examines to what extent the census figures on employment support the view of a sharply growing entertainment industry, whether they can give any indication of potential bottlenecks in live entertainment production, and whether they allow any inferences about changes in the organisation of production.

The United States

Changes in classification make the US data not fully comparable over time.[167] From 1870 to 1900, only creative inputs (such as actors and musicians) and managers (such as owners, managers or officials) were counted. From 1910, specialised practical workers (such as projectionists or ushers) were included.[168] Many persons were classified under other occupations but working for the entertainment business. Their number can be accounted for only from 1930 onward.[169] In 1930 the entire classification structure was changed, making comparisons impossible. Using Edwards (1943), however, the 1930 data are available for both the 1870–1930 and the 1930–1940 classifications. Given the

[166] The close to 400 performances at the Porte St. Martin in 1875 were all of Jules Verne's *Le Tour du Monde en 80 Jours* (*Ibid.*).
[167] For the complete data, see Bakker (2001b: 22).
[168] The grouping into 'creative inputs', 'management' and 'practical workers' is made by the author from the census occupations.
[169] Using United States Department of Commerce (1975: 840).

classification issues, attention here is focused on the growth of the more comparable occupational segments.[170]

The total growth in employment was substantial. The number of creative inputs increased fourteen times between 1870 and 1930, managers eighty times; together they increased twenty-five times (table 2.6). The average growth of creative inputs and managers over the period was 5.5 per cent year on year for sixty years, a rate rarely seen in any other industry. The figures do reveal a significant discontinuity, however. Before 1910, employment grew rapidly, at a pace of about 7 per cent annually, pointing to a sharp rise in entertainment production before fixed cinemas started to arise everywhere.[171] After 1910, employment growth slowed down by two thirds. The discontinuity is even sharper if employment per 100,000 inhabitants is examined. Employment growth between 1870 and 1910 is then about five times the rate between 1910 and 1930, and creative inputs alone did not show any significant growth after 1910. It is probable that it became more and more difficult to extract ever more creative inputs out of the population, from five per 100,000 in 1870 to thirty in 1910, especially since acting is something for which special skills, aptitude and motivation are necessary, which could be learned only partially though formal education and training. In the US it was probably particularly difficult to find ever more creative inputs, because skilled labour was in short supply.

The supply of creative inputs became a major bottleneck for entertainment companies in the 1900s, and cinema was a technology that helped to overcome it. Motion pictures automated the actor's work, and increased the spectator-hours produced enormously. While the number of actors remained the same between 1910 and 1920, real US entertainment expenditure doubled, suggesting that output growth was achieved with a smaller growth of labour inputs.[172] Cinema technology thus enabled a sharp growth in labour productivity.[173]

The census data also point to a change in the organisational structure of entertainment provision. The number of managers rose far faster than that of creative inputs. Whereas in 1870, for every five creative inputs there was one manager, by 1940 for every one creative input there were almost two managers. This suggests that spectator entertainment became more organised, with proportionally more 'overhead' or non-creative

[170] The British and French censuses have similar problems (see below).
[171] Note the drop in travelling companies at that time, discussed above.
[172] See Chapter 3, and Owen (1970), who notes that US recreation expenditure increased sharply as percentage of GDP between 1900 and 1930.
[173] See Chapter 11.

Table 2.6 *Employment in the US entertainment industry, 1870–1940*

	Creative inputs					Classified			
	Actors	Musicians	Total	Management	Practical	Elsewhere	Creat. + Mgt	CMP	All
1870	2,066	4,043	6,109	1,185			7,294		
1880	4,812	7,619	12,431	2,604			15,035		
1890	9,728	15,539	25,267	18,055			43,322		
1900	14,708	23,044	37,752	20,025			57,777		
1910	28,297	34,828	63,125	51,108	9,114		114,233	123,347	
1920	28,361	32,566	62,239	65,463	11,024		127,702	138,726	
1930	37,993	41,282	87,295	96,873	65,009	180,823	184,168	249,177	430,000
1930	nc	41,674		(61,095)		(170,482)			(231,577)
1940	19,232	40,384	65,915	125,098	125,065	104,922			421,000
				Per 100,000 inhabitants					
1870	5	10	15	3			18		
1880	10	15	25	5			30		
1890	15	25	40	29			69		
1900	19	30	50	26			76		
1910	31	38	68	55	10		124	133	
1920	27	31	58	61	10		120	130	
1930	31	34	71	79	53	147	150	202	349
1930	nc	34		(50)		(139)			(188)
1940	15	31	50	95	95	80			319

Note: nc = non-comparable. Creat. + Mgt = total columns 3 and 4. CMP = total columns 3, 4 and 5.
Source: US census of population; for 1930/1940 comparability Edwards (1943).

persons. Growth in management was highest between 1870 and 1890, when resident stock companies were replaced by travelling companies, theatre circuits and central booking offices.[174] Since total industry employment is unknown before 1930, the rise of management may have coincided with a similar growth in practical workers, and cannot be interpreted per se as an increase in management intensity. Between 1930 and 1940, for example, management per creative input rises from 1.11 to 1.90, while management per all other employment increases only half as fast, from 0.29 to 0.42.[175]

Cinema was a technology that needed fewer creative inputs. By the late 1930s, actors, directors and musicians no longer had to be present at the place of consumption. They had all been automated away by talking pictures, and were only used for creating the 'prototype film', which was then copied endlessly.[176] Decentralised production was replaced by a centralised use of the precious creative inputs. Most persons were now employed in distribution and retail, rather than in the making of the performances.

This reasoning is supported by the evolution of real revenue per creative input between 1910 and 1940, for all spectator entertainment combined. Between 1910 and 1920 it increased only moderately, because cheaper filmed entertainment was substituted for live entertainment. Yet the number of spectator-hours per input must have increased sharply. Between 1920 and 1930 the real revenue per input doubled. Since only decennial employment figures are available, the pattern of the increase can only be guessed. It is probable that much of it was driven by the talkies.

Many other services did not experience such a productivity increase. For restaurants, for example, it was less easy to automate and to increase productivity: even if dubious methods were applied, such as doubling of the size of the restaurant, or central cooking of the food for several restaurants, these had only a limited effect on productivity, as the food still needed to be served to each table by persons.[177] Besides, the efficiency gains of such methods would probably be nullified by the decrease in perceived quality – such as ambiance, freshness of food – to the customer. Only later would fast-food self-service restaurants take off.

[174] See, for example, the passage above on United Booking Offices' busy 'trading floor', with bookers for various venues, circuits and acts.
[175] Management intensity thus increased with about 3.8 per cent annually between 1930 and 1940.
[176] See also Chapter 11. On the unemployment caused by the talkies, see Kraft (1996).
[177] On the history of restaurants, see Spang (2000).

Given the increase in leisure spending between 1870 and 1940,[178] it is expected that restaurant employment increased proportionally. Between 1910 and 1930, while entertainment employment stagnated, the number of keepers of restaurants per 100,000 inhabitants doubled, and then once again grew by 50 per cent during the Depression. After 1910 restaurant employment followed a growth path that creative inputs might have followed had cinema technology not been adopted.[179]

Britain

The British census data also show comparability problems. In 1921, the classification changed. Music teachers, for example, were initially grouped under 'musicians', but from 1921 were moved to education.[180] Until 1921, no figures are available on managers. Actors and actresses were the only group that remained more or less comparable. Reliable data on total employment are lacking, because no information is available for persons working in the entertainment industry classified under other occupations.[181]

Entertainment workers were highly concentrated in the capital. In 1911, for example, of the people working in 'picture theatres' 36% lived in London, of music hall workers, 30%, of people employed in theatre, 33%, and of musicians, 22%.[182] However, even if we take the whole Greater London area, not more than 16 per cent of the total population lived there.[183] Outside London, the greatest concentration of actors was in industrial areas: 3.4 per 10,000 inhabitants in Worcestershire and Warwickshire (including Birmingham), and 3.1 actors per 10,000 in Lancashire.[184]

The national figures show a similar growth pattern as in the US, although the rates were somewhat lower and the slowdown larger. Until 1911, the number of actors grew nearly 5% per annum, musicians 2% and practical workers as much as 8% (table 2.7). After 1911, growth stagnated, while the number of actors remained stable. The nearly 8 per cent annual decline of musicians after 1931 is probably due to the combined effect of talking pictures and radio. The only category that grew substantially after 1921 was management. Even if we accept that the classification change had some influence, these figures suggest that sharp

[178] See Chapter 3. [179] For a counterfactual example, see Chapter 11.
[180] Musician census figures are more closely discussed in Ehrlich (1986).
[181] On the details of the census taking see Davis (1990). Sanderson (1984) also uses the census data.
[182] British Census of Population (1911: 616–17). [183] Bédarida (1976: 20).
[184] Sanderson (1984: 27).

growth in demand made it ever more difficult to extract more actors from the population, and that cinema technology automated away a substantial part of them. The bottleneck was such that even film companies were facing a shortage of suitable actors. During the International Cinematograph Exhibition at Olympia in 1913, for example, they organised an acting contest for ordinary people, which attracted 3,176 applicants, including many servants. The contestants had to express various emotions before a panel, and thirty-two eventually got jobs paying between £3 and £7 a week.[185]

The stagnation after 1911 turns into a decline if measured as proportion of the population (table 2.7). The density of creative inputs, however, was between one-and-a-half and two times higher than in the US. The density of managers, coincidentally, was only half as high as in the US.[186] This conforms to the picture of a European industry with abundant skilled labour and informal management.

Changes in organisational structure were probably similar to those in the US. Between 1921 and 1951 managers increased from one to two for every three creative inputs. Before 1921, no figures on managers are available, but the growth of the number of practical workers – from one per three actors in 1881 to four per five actors in 1911 – may be indicative of the changing organisational structure.[187] As various indicators suggest output increased sharply, more spectator-hours were produced with fewer actors and actresses and more practical workers. Larger music halls and theatres, for example, did not require more actors. They needed more practical workers.

The industrialisation hypothesis makes it likely that entertainment became better organised and that more and larger theatre circuits, music halls and variety theatres emerged. It therefore seems logical that organisational 'overhead' – such as the practical workers over creative inputs mentioned above – also increased. A travelling group of actors that performed in a tavern consisted largely of actors, while acting groups in music halls made use of doormen, managers, secretaries, dressers and make-up specialists.

[185] *Ibid.*: 211.

[186] The sharp difference in the number of practical workers is probably due to changes in the classification rules.

[187] The figures on practical workers should be used carefully, since some categories that the census takers found difficult to classify are also put in here. Therefore, changes may be more informative than absolute numbers. To make the last number comparable, for example, to the other years, the estimated number of organ grinders is added to the 1911 figure. This category was moved to another heading in 1911. The number (not given in 1911) is estimated from the remark that nearly all organ grinders were Italian, and that by moving them the number of Italians in entertainment declined from 1,348 to 42 (Census 1911: xxiv). For a fuller discussion see Bakker (2001b).

Table 2.7 *Employment in the entertainment industry in England and Wales, 1881–1951*

	Creative inputs							
	Actors	Musicians	Total	Management	Practical	Creat. + Mgt	CMP	All
1881	4,565	25,546	35,154		1,392			36,546
1891	7,321	38,606	55,022		2,493			57,515
1901	12,487	43,249	69,200		6,840			76,040
1911	18,247	47,116	97,578		14,659			112,237
1921	17,599	22,572	40,171	12,278	36,614	52,449	89,063	89,063
1931	17,830	25,880	43,710	14,104	44,400	57,814	102,214	102,214
1951	17,700	15,000	32,700	20,300	30,700	53,000	83,700	83,700
				Per 100,000 inhabitants				
1881	18	98	135		5			140
1891	25	133	189		9			198
1901	38	133	212		21			233
1911	50	130	270		41			311
1921	46	60	106	32	97	138	235	235
1931	45	65	109	35	111	145	256	256
1951	34	29	63	39	59	102	162	162

Note: Creat. + Mgt = total columns 3 and 4. CMP = total columns 3, 4 and 5.
Source: Census of the Population for England and Wales, 1881–1951.

By adding more 'overhead-personnel', the revenue generated by the creative inputs could be maximised, which paid for the additional overheads. Good management and large-scale organisation should result in a more efficient deployment of creative inputs. Until 1911, the real revenue per creative input was declining from £267 in 1881 to £197 in 1911 (in 1913 pounds). It is likely that diminishing returns set in, making it harder to realise the same revenue with each added input. The average investment per new music hall also declined.[188] They were probably built in more and more marginal places. The film industry's take-off may have reversed this trend. While between 1881 and 1911 revenue decreased 1% annually, between 1911 and 1938 it grew 8% annually. Even if the 1921 figures were affected by the classification change, growth between 1921 and 1938 was still 3.8% annually.

Although the above growth happened earlier and more rapidly than in the US, the initial level was substantially lower, at exchange rates.[189] While in the US the jump took place between 1920 and 1930, in Britain it happened a decade earlier. In 1911, when British revenue per creative input was just under $1,000, the US figure was three times higher. In 1921, when British revenue had grown to about $3,200, US revenue was about $3,500. In 1931, when British revenue was $6,000, US revenue was $5,700. In 1938, British revenue per creative inputs was $8,089, compared to a US figure, based on a new method of census taking, of $12,228.[190]

The number of restaurant keepers can again illustrate what happened to services that did not experience automation. The figures show both an absolute and relative increase between 1921 and 1951: from 35,000 to nearly 80,000, and from 91 to 186 per 100,000 inhabitants, an annual growth of 2.8 per cent.[191] Without motion pictures, this might have been the fate of entertainment.

France

The French census data also shows some reclassifications, especially from 1901 onwards, but they seem somewhat less radical than the American and British changes. Again, a number of persons working

[188] See above.
[189] The exchange rate of five dollars to the pound is used until 1913. After 1913, the rate is taken from Board of Governors of the Federal Reserve System (1943: 662 ff).
[190] A partial explanation for the initially higher British revenue could be the mix of entertainment consumption: Americans consumed more (low-priced) movies, and Britons relatively more live entertainment.
[191] Bakker (2001b).

for the entertainment industry may have been classified under non-entertainment occupations.[192]

Until 1901, the number of actors and actresses grew, although far less than in Britain and the US (table 2.8).[193] Between 1901 and 1926 it sharply declined, but this may have been a rise followed by a fall. The modest increase after 1926 surprises, given the talkies and radio and the sharp decline in the number of live entertainment venues.[194] A potential explanation is the increase in French film production after quotas were imposed on foreign films, and the fact that the talkies increased the appeal of domestic films, at the expense of mainly foreign non-US films.[195] The per capita figures show the same decline and more moderate growth after 1926. Until 1920, the levels were higher than in the US; after that, they became substantially lower. The number of employees in the *spectacle forain*, the travelling entertainment companies, nearly tripled between 1921 and 1936, from 8 per 100,000 inhabitants to 21. This is somewhat surprising, given the Depression and the adoption of sound films.[196]

Management per 100,000 inhabitants was lower than in Britain, far lower than in the US, and actually declined slightly from 1901. Managers per creative input, however, steadily increased from one per ten to over one per three between 1901 and 1936. The number of practical workers per actor increased from one per one to over three per one.

Managers ('patrons') were calculated as a proportion of all non-creative workers for several entertainment businesses (table 2.9). In the *spectacles forains* this share fluctuated between 42 and 45 per cent, probably because of individual showmen travelling with their family. About a quarter of cinema employment consisted of 'patrons', but this dropped after the talkies. Sound cinemas had higher fixed costs and needed a larger scale to break even, requiring more non-management workers. Circuses, casinos and concerts showed a sharp drop in the relative share of management. Possibly only the largest ones, with the highest added value, survived the competition of cinema.

The real revenue per creative input increased steadily, from 47,000 constant francs in 1921 to 62,000 in 1936, a growth of 1.8 per cent per

[192] For a fuller discussion, see *Ibid.* [193] For disaggregated data, see *Ibid.*
[194] See above and Bakker (2004a). [195] See Chapters 7 and 9.
[196] Possibly the competition of cinema forced many smaller theatres in provincial towns to close, so that new opportunities emerged for travelling companies. Cities no longer able to sustain a theatre still formed a market for those companies that settled down for part of the year. They did not have the high fixed costs of theatres, but often used tents or other temporary structures. However, a marked drop in the persons classified under 'entreprise théâtrale' did not take place, putting this explanation in doubt.

Table 2.8 *Employment in the entertainment industry in France, 1886–1946*

	Creative inputs							
	Actors	Musicians	Total	Management	Practical	Creat. + Mgt	CMP	All
1886	9,570		25,092					
1891	10,965		28,404					
1901	11,406	7,453	26,618	3,006	12,354	29,624	41,978	41,978
1911	(15,181)	(52,726)	(37,545)					(64,634)
1921	9,886	10,309	26,004	5,081	17,437	31,085	48,522	48,522
1926	8,767	12,666	27,882	5,990	21,146	33,872	55,018	55,018
1931	8,814	13,039	27,830	8,292	25,933	36,122	62,055	62,055
1936	9,398	12,452	26,920	10,378	31,227	37,298	68,525	68,525
1946			(42,770)					
				Per 100,000 inhabitants				
1886	25		66					
1891	29		74					
1901	29	19	68	8	32	76	108	108
1911	(38)	(133)	(95)					(163)
1921	25	26	66	13	44	79	124	124
1926	21	31	68	15	52	83	135	135
1931	21	31	66	20	62	86	148	148
1936	22	30	64	25	75	89	164	164
1946			(106)					

Note: Creat. + Mgt = total columns 3 and 4. CMP = total columns 3, 4 and 5. Census classifications changed significantly in 1946, so the 1946 figure is not fully comparable.

For 1911 only the aggregate creative inputs have been identified; these may not be fully comparable. Actors and musicians have been estimated from this number, using the average of the 1901 and 1921 proportions.

Source: Census of Population, 1886–1946.

Table 2.9. *Management as percentage of all non-creatives in the French entertainment industry, 1901–1936*

	1901	1921	1926	1931	1936
Spectacle forain	30	45	42	45	45
Cinéma		26	25	23	19
Concert, casino, bal	30	11	9	8	8
Entreprise théâtrale	6	6	8	7	6
Cirque, ménagerie	13	17	15	11	9
Acrobate, gymnaste, etc.	11	12	15	8	6
Course de chevaux	8	8	8	7	9
PMU					1
Toréador, jockey, etc.	0				
Agence théâtrale	20	19	16	21	19
All businesses above	20	23	22	24	25

Note: non-creatives refers here to management and practical workers.
Source: Census, 1901–1936.

annum. For a large part this must have been driven by more efficient management and organisation that used the creative inputs better. Nevertheless, the growth is slower than in the US and Britain. In absolute terms France also differed. In 1931, revenue per creative input was about $3,500 in the US, $3,200 in Britain, but only $2,350 in France, at exchange rates.

Comparing the countries

Between 1870 and 1950, Britain and France had considerably higher levels of actors per 100,000 inhabitants than the US, even though the US was a large net exporter of filmed entertainment and of rights to live entertainment productions (figure 2.9 and table 2.10). This supports the notion that through professional management and automation, the US industry made up for its shortage of creative inputs. While in 1900 sold output per creative input was only 13,000 spectator-hours in the US, somewhere in between the 21,000 in Britain and the 1,000 in France, by 1938 it had increased nearly tenfold to 122,000 spectator-hours per creative input, compared to 98,000 in Britain and just 22,000 in France.

The number of actors grew strongly in all three countries between 1870 and 1910, and stopped abruptly afterwards, probably because of

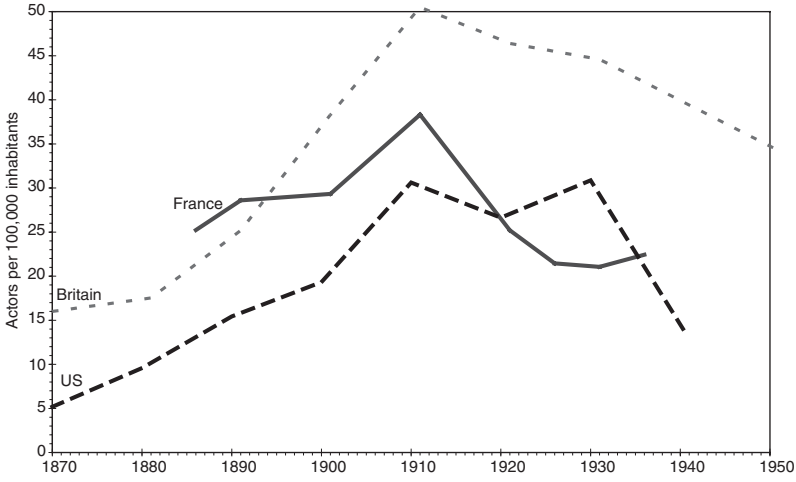

Figure 2.9 Number of actors per 100,000 inhabitants, US, Britain and France, 1870–1950
Source: censuses.

cinema's take-off. Without motion pictures, the phenomenal output growth would hardly have been possible. Real revenue per creative input in the US in 1900 was $4,400, compared to $1,500 in Britain, and $200 in France, while in 1938 the figures were $12,700, $8,000 and $1,800, respectively.

The number of managers per actor is probably the best comparator for management intensity, as classification differed less across countries than over all entertainment employment. In the US, the ratio was about three times that in the UK, across the period (table 2.11). Initially it was even five times as high as in France, but this decreased to about three times by 1930.

Practical entertainment workers per actor is a relatively comparable proxy for the intensity of skilled labour. To be classified as an entertainment worker, rather than elsewhere in the census, one often needed a practical skill, even if it could be learned in a few weeks or months. The ratio is the reverse of management ratio, being initially three to five times as high in Britain than in the US. By 1930 it was still half as high in the UK. Skill intensity in France showed a similar pattern.

This divergence in management and skill intensity between the US and Europe concurs with the typology of the US as a country with scarce skilled labour, and therefore an emphasis on professional management, high R&D and mass-production techniques that used unskilled labour,

Table 2.10 *Comparison of employment in the entertainment industry, Britain/US and France/US, 1886–1940, US = 100*

	Creative inputs						
	Actors	Musicians	Total	Management	Practical	Mgt/Crtve	Prctcl/Actr
			UK/US: number per 100,000 inhabitants				
1880	183	647	546				
1890	163	539	472				
1900	198	438	428				
1910	165	346	395		411		*249*
1920	174	195	181	53	932	29	*535*
1930	144	193	154	45	210	29	*146*
1940	*235*	*95*	*127*	41	63	33	*27*
			UK/US: growth of number per 100,000 inhabitants				
1880	75	62	69				
1890	188	0	54				
1900	60	−8	75				
1910	61	365	578		1855		526
1920	−27	91	16	34	8	101	11
1930		767		16			
1940							
			France/US: number per 100,000 inhabitants				
1880	263		267				
1890	185		185				
1900	152	63	138	29			
1920	95	86	113	21	429		
1926/30	69	92	96	19	98	56	90
1931/30	68	93	94	25	117	59	99
1936/40	*154*	*97*	*129*	*26*	*79*	*112*	
			France/US: growth of number per 100,000 inhabitants				
1880	52	0	46				
1890	11		−37				
1900	−16	72	−5	34			
1920	−127	183	2	175	19		

Source: Censuses of Population; tables 2.6 to 2.8.

and European countries as having a relative abundance of skilled labour and therefore focusing more on shop floor management and crafts-based production techniques that were more skill-intensive.[197]

[197] See, for example, Broadberry (1997).

Table 2.11 *Comparison of employment in the entertainment industry, US, Britain and France 1886–1940*

	Mgt/Actor			Prctcl/Actor			Mgt/Prctcl		
	US	UK	FR	US	UK	FR	US	UK	FR
1870	0.57								
1880	0.54				0.30				
1890	1.86				0.34				
1900	1.36		0.26		0.55	1.08			0.24
1910	1.81			0.32	0.80		5.61		
1920	2.31	0.70	0.51	0.39	2.08	1.76	5.94	0.34	0.29
1926			0.68			2.41			0.28
1930	2.55	0.79	0.94	1.71	2.49	2.94	1.49	0.32	0.32
1936			1.10			3.32			0.33
1940	*6.50*			*6.50*			1.00		
1951		1.15			1.73			0.66	

Note: Mgt = management, Prctcl = skilled labour.
Source: Censuses of Population; tables 2.6 to 2.8.

Conclusion

This chapter examined the emergence of national entertainment markets before the film industry took off. In this era, market integration progressed along other paths, such as improved transport, communication, organisation and the evolution of intellectual property rights. Important in all three countries was the gradual deregulation of live entertainment production, which resulted in a substantial increase in investment in the industry. Even without cinema, numerous innovations were adopted that interacted with each other and the business environment, and sharply increased the industry's output and productivity.

Initially, the economic functions of R&D, production, distribution and retail were all done within the boundaries of local firms. Gradually during the nineteenth century these activities vertically disintegrated at the local level but integrated horizontally at the regional and national level, leading to increased market integration. Large-capacity steel frame theatres became organised in circuits through which entertainers were routed in the most efficient way possible by central booking offices.

The chapter argued how the growth of live entertainment can be explained both by growth within specific forms of live entertainment and by the appearance of new forms of live entertainment at ever lower prices. The latter was part of a process of dynamic product differentiation. A new form generally offered (horizontally) a different and

(vertically) sometimes a lower quality at a lower price. In response, the existing forms of entertainment were forced to differentiate their offerings, for example by increasing quality. As each new form added a new distribution channel, the market gradually became more and more segmented.

When the major resident stock companies were replaced by travelling companies, for example, resident stock re-appeared in smaller theatres at far lower prices for a partially different market. Likewise, when the theatre industry was completing its process of national market integration, new forms of entertainment emerged, such as burlesque and vaudeville, that developed along similar lines to theatre. In this process, theatre differentiated itself to make it stand out from those competing forms. Similarly, within those new forms of entertainment product differentiation occurred: once the integration of a national vaudeville market was nearly completed, small-time vaudeville outlets emerged alongside the major vaudeville circuits, on a different, smaller scale at far lower prices. Dynamic product differentiation was a phenomenon in which the process of creative destruction actually lost some of its teeth. New entrepreneurs did not entirely destroy the old kinds of entertainment, both because the new forms were partially differentiated and because the old entertainments differentiated themselves further after the entry of new types. Often their decline was relative rather than absolute.

By the end of the century, the radical changes in the theatre and other live entertainment industries had sharply increased productivity. The rapid growth in the number of creative inputs used during the late nineteenth century shows how firms had to add significantly more labour to increase output. This resulted in bottlenecks towards the end of the century. A large demand for entertainment existed, but process innovations to bring productivity up and prices down appeared to reach decreasing returns. During the 1900s, once cinema technology was adopted on a large scale, the growth of creative inputs came to an end, as motion pictures reduced the amount needed.

The pictures automated a substantial part of live entertainment in a two-phased process of creative destruction. The early cinemas automated away part of the lower-priced, small-town live entertainment, while twenty years later the talkies started to compete with the high value-added metropolitan live entertainment.

The British and French entertainment businesses had higher levels of creative inputs and of skilled labour than the US ones, and also were less management-intensive. The industries developed along broadly similar lines in all three countries. Steel-frame theatres with differentiated prices

emerged, as did theatre circuits and central booking offices; the lengths of run increased sharply, and numerous innovations in staging and effects were introduced; and finally, cinemas took off in all three countries at the same time. These similarities in characteristics and development of a service industry that initially involved non-tradeable products are remarkable. They may have been partly driven by wider changes in demand and consumption patterns brought about by industrialisation and modernisation in those societies, involving factors such as increasing real wages and leisure time, population growth, urbanisation and expanding urban transport networks. To these factors we now turn.

3 The increase in demand for entertainment

The underlying forces that shaped the demand for entertainment came in three pairs.[1] The first pair, the growth of disposable income and leisure time, increased the demand for entertainment. The second pair, urbanisation and new transport networks, enabled the entertainment industry to turn more and more of this demand into consumption. The last pair, the birth rate and immigration, increased the population below thirty years of age, the sector that consumed most entertainment.[2]

These factors did not just affect entertainment but also recreation demand in general. This chapter therefore examines the latter longitudinally along with the consumption of spectator entertainment itself. The next chapter will investigate these at the cross-section for several benchmark years.

The industrialisation hypothesis suggested that a sharp rise in demand – especially at lower incomes – caused bottlenecks in entertainment production. This resulted in large rewards for entrepreneurs that could provide more entertainment at lower prices or at a higher quality. The former will be investigated through a demand curve constructed in the next chapter, the latter will be discussed in Part II, on the quality race between film companies during the 1910s.

Underlying factors shaping demand

The increase in leisure time

Time and money both affected entertainment consumption. People had to decide how many hours to spend on labour versus leisure, what to do

[1] The first two pairs are identified in Briggs (1960: 39–42).

[2] Surveys of cinema-going showed that the majority of cinema-goers were below thirty (Chapters 8 and 10). Nowadays, the average age of cinema-goers is probably much lower. Before 1920, no reliable figures are available, but it can be assumed that for each subsequent age-cohort, entertainment attendance would be lower. Although age structures differ substantially, this does suggest that for both earlier and later periods, spectator entertainment consumption decreased with age. Opera and artistic theatre, for which age structures may have differed, were a relatively minor part of all live entertainment.

in the resulting free time, and how much to spend on it. Rising real wages could have induced people to work more, because rewards were higher, or less, because consumers could increase leisure time without reducing real income. In addition, changes in preferences because of, for example, new goods could affect people's choices of hours. Hans-Joachim Voth (2000), for example, showed how in Britain during the Industrial Revolution, the availability of new goods induced people to work longer hours in order to pay for them.

During the second industrial revolution, many of the new goods were time-intensive, such as, for example, the bicycle, the car, skating rinks, bowling alleys or spectator entertainment. Consumers had to find a balance between working enough hours to buy the goods and having enough time to consume them. The reduction in working hours suggests that the latter became more important. The labour supply had probably turned the kink of a backward bending curve, as people exchanged higher wages (and productivity) for fewer hours. So the preferred choice of consumers appears to have been to increase their leisure time.[3] This will be explored below, while the next section discusses the role of money.

In the US average working hours decreased from seventy a week in 1850 to sixty in 1900 (table 3.1). In the 1860s and 1880s they declined quickly, in the 1850s, 1870s and 1890s, slowly. The American male born in 1900 could expect to be two-thirds of his life in the labour force, out of a total of forty-eight years.[4] Between 1900 and 1914 the decline accelerated and hours dropped by 6 per cent. Part of the reduction may have been countered by an increase in the travel time between home and work.

Campaigns for the eight-hour workday were organised, and between 1913 and 1919, hours fell by another 8 per cent. The Eight Hours Act (1912) required government contractors to stick to a forty-eight-hour week, or pay a 50 per cent overtime premium. During the 1920s the decline slowed, to only two hours over the decade. Only in 1938, when the Supreme Court approved the Fair Labor Standards Act, did working hours become federally regulated.[5] Holidays also increased substantially, from just four days in 1870, to five in 1900 and seventeen in 1938.[6]

Working weeks differed substantially between industries. In agriculture, for example, they declined from seventy-two hours in 1850 to sixty-seven

[3] See also Jowett (1974).
[4] For comparison, an American male born in 1960 could expect sixty-seven years of life, of which 62.2 per cent (41.7 years) would be spent in the labour force (Owen 1970: 11).
[5] Ibid.: 61–4. [6] Huberman and Minns (2007: 546).

Table 3.1 *Average weekly hours and holidays, US, Britain and France, 1850–1960*

	Average weekly hours						Holidays per year			
	United States									
Year	(I)	(II)	(III)	Britain	France	Western World	US	Britain	France	Western World
1850	69.8									
1860	68.0									
1870	65.4		62.0	56.9	66.1	64.3	4	14	19	13
1880	64.0		61.0	56.6	66.0	62.5				
1890	61.9		60.0	56.3	65.9	60.9				
1900	60.2	58.5	59.1	56.0	65.9	59.5	5	20	23	17
1910	55.1	55.6								
1913			58.3	56.0	62.0	57.0				
1920	49.7	50.6								
1929	47.0	48.7	48.0	47.0	48.0	47.8				
1930	45.9	47.1								
1938			37.3	48.6	39	46.1	17	30	33	29
1940	44.0	42.5								
1950	40.0	41.1	42.4	45.7	44.8	45.4	18	24	28	25
1960		41.0	40.2	44.7	45.9	43.2				

Sources: I: Dewhurst (1955), II: Owen (1970); both for non-agricultural workers.
US III, Britain, France, Western World and holidays: Huberman and Minns (2007), for full-time production workers.

in 1900, moving further away from the national average. By 1950 the workweek was still forty-seven hours.[7] The iron and steel industry only abolished the twelve-hour day in 1923. Several other industries, such as canning and preserving, sugar refining and lumber, which had retained unusually long working hours during the war, reduced them substantially between 1922 and 1929.[8]

In Britain weekly hours decreased from sixty-five in 1856, to fifty-six in 1873 and forty-seven in 1924, 27.7 per cent in all. Annual hours, allowing for holidays, sickness and strikes, fell slightly more, from 3,185 in 1856 to 2,071 in 1937, or 30.3 per cent.[9]

Between 1887 and 1892 workers campaigned for the eight-hour day. The free Saturday afternoon also gave workers more leisure time. In 1894 the Royal Commission on Labour reported that state regulation of hours was not desirable. Some progressive engineering firms adopted eight-hour days, and in 1908 a law secured the same for miners.[10] It was not until after the First World War that all workers enjoyed an eight-hour day.[11]

The hours worked a day, the days worked a week, and the weeks worked a year all decreased, although working hours of the middle-class occupations appear to have fallen more rapidly.[12] Holidays increased from fourteen in 1870 to twenty in 1900, to thirty by 1938.[13] The number of paid holidays increased after 1920. In the mid-1930s 1.5 million workers were entitled to them, and with the Holidays of Pay Act of 1938 nearly eight times as many were.[14]

In France leisure time increased slightly during the nineteenth century. Before 1850, working hours probably tended to increase. In 1848 legislation limited the working day to eleven hours in Paris and twelve hours in the provinces.[15] However, in practice the average working day remained twelve to fourteen hours until about 1870 and between eleven and twelve hours until 1890.[16] In the 1900s the ten-hour day quickly became the practice.[17] The increase in leisure time was distributed unevenly. For many the increasing distance and time between home and work countervailed the decrease in working hours. Craftsmen and domestic workers, for example, benefited disproportionately from falling

[7] Dewhurst (1955: 38). [8] Owen (1970: 64).
[9] Mitchell (1988: 147), based on Matthews, Feinstein and Odling-Smee (1982: Appendix D). Mitchell mentions Bienefeld (1972), which gives no systematic series like Matthews *et al.* Cf. Huberman and Minns (2007), table 3.1.
[10] Cross (1989: 71–4). [11] *Ibid.*: 129–31. [12] Benson (1994: 14).
[13] Huberman and Minns (2007: 546). [14] Benson (1994). [15] Dupeux (1974: 138).
[16] *Ibid.*: 135; Berlanstein (1984: 123). Larroque (1988: 44) finds average hours of thirteen to fifteen a day for the 1870s. Cf. Huberman and Minns (2007), table 3.1.
[17] Berlanstein (1984: 123, 126).

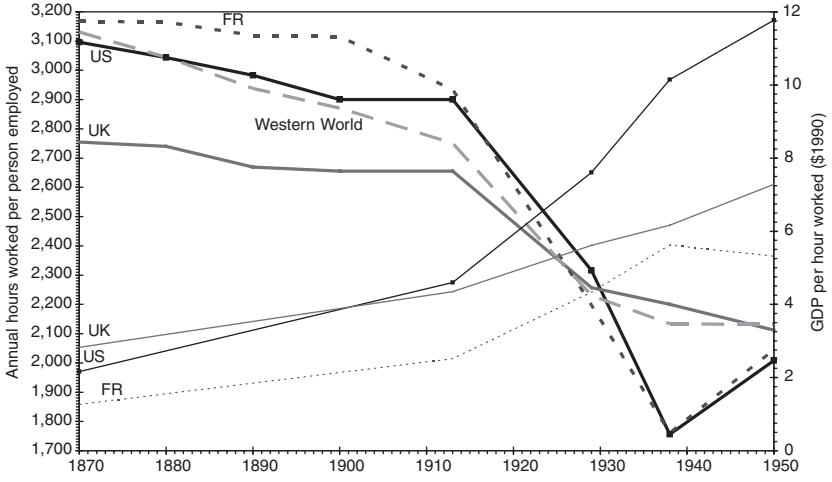

Figure 3.1 Annual hours worked per person employed and GDP per hour worked (in 1990 dollars per hour), US, Britain and France, 1870–1938

Note: The lines are interpolations from four benchmark years: 1870, 1913, 1929 and 1938.
The bold lines represent annual hours worked, the thin lines GDP per hour worked.
Source: Huberman and Minns (2007: 548); GDP/hour derived from Maddison (1995: 248–9) data on GDP per person employed and Huberman and Minns' annual hours per person.

hours, while it is doubtful if factory workers benefited over all.[18] In 1906, campaigns for the eight-hour day started.[19] Holidays in France increased from nineteen in 1870 to twenty-three in 1900 and thirty-three in 1938.[20]

Although in 1870 total annual hours varied substantially between the three countries, they converged until 1929 (figure 3.1). Before 1913, hours fell gradually, even if accounts differ on the exact pattern.[21] After the First World War working hours fell rapidly in all countries. In the 1930s, working hours diverged. In Britain they stabilised, in the US and France they fell even more sharply. Labour productivity rose at a similar pace as working hours fell.

[18] *Ibid.*: 123–4. [19] *Ibid.*: 126. [20] Huberman and Minns (2007: 546).
[21] Huberman and Minns (2007) find stagnant working hours in Britain and France between 1900 and 1913, while Dewhurst (1955) and Owen (1970) noted substantial falls.

Since entertainment consumption takes time, falling working hours were crucial for the rapid rise in entertainment demand.[22] A small elite could not, by buying much more entertainment, be a substitute for the demand of many people with small incomes, since everybody, rich or poor, had to live with a twenty-four-hour day.[23] The elite could only enjoy more expensive entertainment. Time and again contemporary observers made this point. They stated that decreasing working hours would lead to a rapid increase in demand for consumer goods and services, which would offset the cost increase because of higher wages. Authors such as Sidney Webb and Harold Cox argued that leisure created wants that increased markets for popular services and goods. Henry F. Champion wrote that the eight-hour day would 'excite a desire for additional means of recreation, amusement and cultivation'. Radical trade unionist Tom Mann argued that leisure provided workers 'with the desire for the products of manufacture'. French union leader Victor Griffuelhes predicted in 1904 that 'leisure leads the worker to desire to consume more, will increase his needs, and will lead to the proportionate increase in production'.[24]

Some contemporary economists shared this view. George Gunton, in his book *Wealth and Progress* set out a demand-side theory which held that capital accumulation depended on wages and working-class consumption, rather than investment: 'The development of labour's capacity to consume wealth is as important economically ... as it is to increase his power to produce'.[25] The European economist Lujo Brentano, later

[22] Voth (2000: 126, 192–210) found an increase in working hours from 2,795 hours a year in 1760 to 3,070 in 1800 to 3,366 in 1830, according to one of his six measures. This coincided with increased spending on new consumer goods. Voth argued that people worked longer hours to buy those new goods. Towards the end of the nineteenth century they possibly had an increased preference for leisure time to consume more services. Between 1750 and 1830, the three factors discussed below that connected rising free time with rising entertainment consumption – the division between labour and leisure, the increase in planning and timing of work and leisure, and the rise in opportunity costs – were gradually starting to take shape.

[23] According to Becker (1965), if an activity becomes less costly in terms of time or goods, this results in an increase in its relative amount, while a wage rise will decrease the consumption of those activities that are more time-intensive. When incomes rise, for example, people take fewer children or watch movies instead of reading books. Becker (1993: 386) links this theory to economic development in general: 'Economic and medical progress have greatly increased length of life, but not the physical flow of time itself, which always restricts everyone to 24 hours per day. So while goods and services have expanded enormously in rich countries, the total time available to consume has not. Thus wants remain unsatisfied in rich countries as well as in poor ones. For while the growing abundance of goods may reduce the value of additional goods, time becomes more valuable as goods become more abundant. The welfare of people cannot be improved in a utopia in which everyone's needs are fully satisfied, but the constant flow of time makes such a utopia impossible.'

[24] Quoted in Cross (1989: 63). [25] *Ibid.*: 164.

an advocate of the eight-hour day, claimed that employers no longer needed long hours or low pay to assure profits, a view long held by economists and employers. Rather, advanced consumer needs developed in leisure time would stimulate individual productivity. Growth, rather than redistribution, would be the consequence of shorter hours. By broadening the mass market, they would create jobs.[26]

The question remains how exactly the additional leisure hours translated into more consumption of spectator entertainment. Three long-run changes stand out: the increasing division between labour and leisure, the increase in the planning and timing of work and leisure time, and the rise in opportunity costs. Before industrialisation most work was concentrated around the home and work and private life were inseparable. When people became employed in factories, labour and leisure became clearly distinguished.[27] Additional leisure hours were experienced more as 'real' leisure time, since there was no back-log of work to be done that could interfere with it.

The time that a worker spent in a factory was planned and organised carefully. An organisational structure emerged to use the hours as efficiently as possible. Starting with Frederick Taylor in America, actions of workers were analysed, divided in distinct steps and then performed by separate, specialised workers. Although working hours decreased, the rise in productivity made up for it.[28] Workers became used to the careful management of time, to the idea of making time productive. They thus also felt a disposition against idleness, in the sense of doing nothing, letting time wither away unplanned, staring out of the window. Leisure time had to be planned, had to be used productively. Increased leisure planning, driven by the conditioning of the worker in the factory, was reinforced by social campaigns for better spending of free time. An example is the 'rational recreation' movement in Britain, which tried to change workers' leisure time from drowning away in a pub into a carefully planned programme aimed towards self improvement. The labour movement especially supported the view that leisure time should be used to improve oneself by following courses, reading literature, going to the theatre or an exhibition, or making music.

Entertainment always had an opportunity cost in hours, while many other daily activities were bare necessities and carried no opportunity cost, even though they could be done more quickly, for example eating out versus cooking oneself, using a washing machine versus washing manually, using a car versus walking to work. This made an increase in

[26] Brentano (1894), quoted in Cross (1989: 164). [27] Cross (1988).
[28] Cross (1989: 103–28).

the amount of non-labour time an essential pre-condition for a rise in entertainment consumption.

As wages and disposable income grew, leisure time became more valuable in monetary terms. A worker had to make an increasing monetary sacrifice to get one hour of extra leisure time. The cost of leisure was felt more, and so the idea grew that it should be used 'productively'. Increased wages gave workers the choice between longer hours, which became more attractive, and more leisure, which became more affordable. Leisure opportunities thus had to compete with the potential extra working hours. This paved the way for an entertainment industry that could guarantee an enjoyable and carefully timed leisure experience.[29]

The growth of real wages

Increases in wages, then, increased both the money people had left to spend and the opportunity cost of their time. Consumers therefore wanted high-quality leisure experiences within a defined amount of time and this gave opportunities to the entertainment industry.[30] Despite large fluctuations, real earnings increased over the second half of the nineteenth century. In the US, the average annual earnings for non-farm labourers in 1860 were $363 ($457 in 1914 dollars; table 3.2), which increased to $483 by 1900 ($573 in 1914 dollars). This meant on average a real annual growth of 0.6 per cent over these forty years. Years of increasing earnings, however, were interspersed with years of declining earnings. The strongest rise took place in the 1880s, when earnings grew at an annual pace of 2.8 per cent. Between 1900 and 1926, the growth rate in real earnings nearly tripled, to 1.4 per cent annually. Compared to the earlier period, the earnings had fewer ups and downs, a circumstance which was probably affected by the introduction of minimum wages, increasing unionisation and other regulation.

For all US labourers, including farm labourers, between 1900 and 1940 real earnings grew at the same pace of 1.4 per cent annually, with a sharp drop in the late 1920s and 1930s. These figures are impressive, since over this time span, working hours diminished substantially, which means that the real earnings per hour worked must have increased even more. Owen finds an 80 per cent increase in real hourly earnings between 1900 and 1929, or 2.1 per cent per annum.[31]

[29] When income rises people reduce time-intensive activities (Becker 1965; note 23).
[30] This section focuses on earnings, not national income per capita, since that is not exclusively related to earnings. Earnings are what mattered for entertainment expenditure.
[31] Owen (1970: 76).

Table 3.2 *Average annual earnings per worker, US (in 1914 dollars)*

Year	Non-farm	Non-farm	All wages
1860	457		
1870	392		
1880	395		
1890	519	531	
1900	573	581	568
1910		665	705
1920		746	843
1930			856
1940			995

Note: USDC gives two partially overlapping non-farm series with differing values.
Source: US Department of Commerce (1975: 165, 166–8).

In Britain, at the same time as working hours decreased, disposable income increased. Between 1881 and 1900, average weekly wages in manufacturing rose 22 per cent (a growth of 1.1 per cent a year), and between 1900 and 1913 another 13 per cent (0.9 per cent a year).[32] Between 1881 and 1900 average real wages grew 35 per cent (an increase of 1.6 per cent a year). Between 1900 and 1914 real wages fell 2.9 per cent (a decrease of 0.2 per cent a year).[33] The weekly wages for manual workers increased by 18 per cent between 1881 and 1900 (an increase of 0.9 per cent per year), and 8 per cent between 1900 and 1914 (an increase of 0.5 per cent a year).[34]

These figures, taken from Mitchell, suggest that a possible mild decrease in real wages took place during the first decade of the twentieth century. However, Charles Feinstein argues that those figures may not reflect the actual situation, as an increasing part of the British workforce came to work in services, such as domestic service, and that when these services are included, the decrease in real wages changes into a rise.[35] This rise probably increased the demand for entertainment.

In France during the nineteenth century the purchasing power of the people gradually increased.[36] The growth became substantial in the latter part of the century. Although precise, figures for all of France are lacking, Dupeux argues that between 1860 and 1914 real wages

[32] Mitchell (1998: 181–2). [33] Mitchell (1988: 150–1).
[34] *Ibid.*: 151. [35] Feinstein (1990a, 1990b). [36] Guillaume (1992: 104).

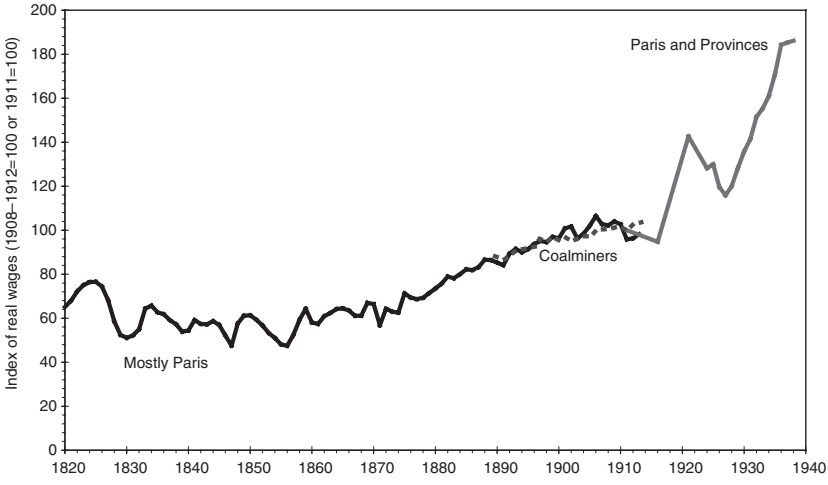

Figure 3.2 Real wages in France, various time series, 1820–1938
Note: Mostly Paris: Above all in the second half of the nineteenth century, this series mostly reflects Paris, 1908–1912=100.
Paris and provinces: Unweighted mean of real hourly wages in all sectors in Paris and in the provinces, 1911=100.
Coalminers: 1911=100.
Sources: Mostly Paris: Chadeau (1989: 231–7), quoting Levy-Leboyer (1971); Caron (1979); Singer-Kerel (1961).
Coalminers and Paris and provinces: Mitchell (1998), quoting Levy-Leboyer (1985), deflated using Mitchell's consumer price index.

increased between 30 and 40 per cent overall.[37] Figure 3.2 shows the growth of wages between 1820 and 1938. Although the wages may not always be wholly representative for all of France, the trend probably is. Up to the mid-1870s, real wages fluctuated greatly, and seem to have been sensitive to the business cycle. From the mid-1870s onwards, real wages started an upward trend, which lasted for three decades until the mid-1900s. These thirty years coincided with a boom in live entertainment production and with the emergence of cinema, although not with the take-off of the film industry, when fixed cinemas emerged all over France. Between c. 1905 and 1915 – as the film industry took off – wages stabilised, after which renewed and faster growth of real wages took place.

In figure 3.1 above, labour productivity, measured in GDP per hour worked, was mapped in a comparable format for the three countries, showing that labour productivity increased at a similar pace as working hours fell. Changes in labour productivity generally translate into changes

[37] Dupeux (1974: 138, 147).

in wages. If, between 1870 and 1938, the growth in real GDP per person employed is divided by the decrease in the number of hours worked, a rough measure emerges of the amount of money people had available to spend on their newly won leisure hours. For the US this was $12.32 per hour for 902 newly won hours, for Britain, $8.05 for 717 newly won hours, and for France, $5.36 for 1,079 newly won hours.[38] These figures suggest that the demand for entertainment must have grown faster in the US than in the two European countries.

Urbanisation

Another important development for the entertainment industry was the rapid urbanisation during the nineteenth century, which increased the effective market size. Entertainment facilities have a minimum efficient scale and depend highly on scale effects: an important part of costs are fixed and sunk costs, both sunk in the building and in the real estate, and in the theatre production. While fixed costs incurred in acquiring the real estate and building the theatre may be partially recovered by selling the property, the costs sunk in the theatre production can only be recouped by selling theatre tickets. As the typical feature of economies of scale is that output and revenue can be raised over time without a proportional rise in invested capital and labour, for entertainment facilities economies of scale are everything.

Entertainment places therefore depended on the people who lived within an easy travelling distance. As countries became more urbanised, more cities became large enough for theatre, music halls and other venues, and existing cities could accommodate more of them. The minimum city size needed to support a dedicated, commercially operating entertainment place probably was about 20,000 inhabitants in the later nineteenth century.

Table 3.3 shows a rapid urbanisation in the US during the second half of the nineteenth century. The number of inhabitants living in cities over 25,000 tripled, as did the number living in cities of over 100,000. Britain, France and Germany also experienced fast urbanisation, although the degree differed from that of the US, and amongst themselves.

A striking feature of Britain was that it was highly urbanised. In 1890, a third of the population lived in towns of over 100,000 people, while for the US the figure was only half that, and for the continental countries

[38] All amounts in 1990 international dollars. Calculated from Maddison (1995: 248–9). Of course, these amounts only give a rough estimate, as real GDP is not the same as the wages per hour worked.

Table 3.3 *Indicators of urbanisation for the US, Britain, France and Gemany, 1850–1940*

Year	% of inhabitants in cities over 100,000				% of inhabitants in cities over c. 20,000			
	US	EW	FR	D	US >25,000	EW >20,000	FR >10,000	D >20,000
1850	5.1		4.6		8.9	33.6	13.6	
1860	8.4	25.0	7.7		12.0	38.2	18.0	
1870	10.7	25.8	9.1	4.8	15.1	42.0	20.2	12.5
1880	12.4	29.7	10.5	7.2	17.2	47.9	21.2	16.1
1890	15.4	31.9	11.8	12.1	22.2	53.7	24.2	21.9
1900	18.7	35.4	14.0	16.2	25.2	58.2	29.6	28.8
1910	22.1	37.9	14.8	21.3	31.0	60.6	32.4	34.7
1920	26.0	39.1	15.5	26.8	35.7	62.4	34.6	40.5
1930	29.6	43.1	16.0	30.4	40.1	71.2	38.9	43.4
1940	28.9	38.4	16.2	30.4	40.1	69.2	38.9	43.6

Note: EW = England and Wales; FR = France; D = Germany.
EW: years are always one year later, except 1940 entry, which has 1951 value.
FR: Years are always one year later, except 1870, which has 1872 value.
D: 1870 has 1871 value; 1920 has 1925 value; 1930 has 1933 value; 1940 has 1939 value.
Source: Flora (1987: 259, 262, 278); US Department of Commerce (1975:11–12).

even less (see table 3.3). The difference persisted through the period 1890–1920 with only the US moving somewhat in the direction of the British urbanisation ratio.

The high degree of urbanisation is probably one of the factors in the high per capita entertainment consumption of Britain. As people lived in cities, they were closer to entertainment venues, so entertainment venues could exploit economies of size by having a large number of seats.

France rapidly urbanised during the nineteenth century, but remained far less urbanised than Britain, the US, and even Germany. As table 3.3 shows, in 1890 only 12% of French people lived in cities with over 100,000 inhabitants, compared with 32% in Britain and 15% in the US. Twenty years, later the ratio for France had increased to 15%, but for Britain it had increased to 38%, for the US to 23%, and for Germany to 21%. The figures for cities with over 50,000 inhabitants, for which comparable figures are available only for France and the US, show a similar picture, with 15% of Frenchmen living in those cities in 1890, versus 18% in the US, increasing to 19% in 1910, while the US had reached 28% by that time. Although France became an increasingly urbanised society relative to some other western countries, its urbanisation

process was slower and started later. This made it more difficult for entertainment facilities to reach economies of scale, as it limited their effective market size. It may explain the high share of entertainment workers who were travelling entertainers.

New transport networks

The effect of urbanisation on the viability of entertainment venues was accelerated by the emergence of new transport networks during the second half of the nineteenth century. This brought entertainment places in city centres within the reach of people in the suburbs and nearby towns, and within cities they brought the centre within the reach of people in the outskirts and created sub-centres. The economist R. W. Vickerman even used transport data as a surrogate indicator for leisure consumption, reasoning that since people have to travel for most leisure activities, measuring transport would give an indication of leisure consumption. Vickerman also studied the exact location of leisure facilities in cities, which he claims is important for costs and revenues.[39]

Figure 3.3 shows the rapid expansion of passenger traffic on the British railways. Growth was strongest from the 1840s until the 1870s. This development of the railway network increased the market size of entertainment facilities. In London, for example, many theatres and music halls advertised the times of the last trains from London to the suburbs and nearby towns, and reassured the customers that they would be able to catch them.[40]

The introduction of new transport systems was also an important factor in France at the end of the nineteenth century. Figure 3.3 shows that, over the nineteenth and first part of the twentieth century, the growth in the number of passengers followed about the same curve as in Britain, although the level remained consistently lower over time, because of the smaller population size in France.[41]

Within cities, the introduction of affordable mass transport systems brought the city centres and sub-centres within the reach of the working classes. The area that the entertainments of city centres could serve therefore expanded to more or less the whole city and suburbs, while the area that entertainments in the outskirts could serve also increased. In Paris, for example, this process had already started in the nineteenth century with the horse-drawn omnibus, which connected the suburbs

[39] Vickerman (1975). The work is quite theoretical, with only one small survey on 1970s' Oxford.
[40] Weightman (1992: 133–4). [41] See also Millward (2005).

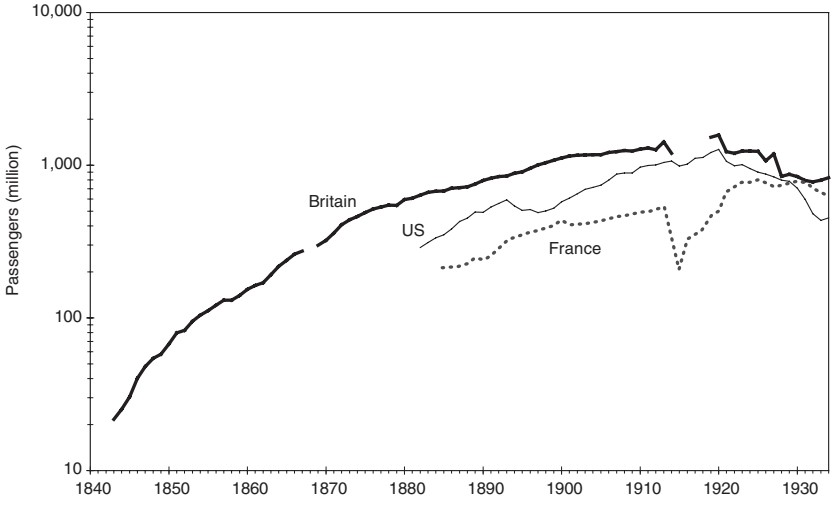

Figure 3.3 Number of passengers transported on US, British and French railways, per year, 1843–1934
Source: Mitchell (1998: 678–82).

with the city centre. At 25 to 30 cents a return ride, it was within the budget of the middle class. For workers, who earned between 1 and 2 francs a day around 1860, the price was still prohibitive.[42]

In the late nineteenth century, the urban transport networks expanded rapidly, prices came down and the number of passengers boomed. Tramway passengers tripled from 137 million in 1890 to 489 million in 1913, omnibus passengers doubled from 115 million to 246 million over the same period, and the subway, non-existent in 1890, carried 467 million passengers by 1913. Taken together, the total passenger-rides nearly quintupled from 252 million in 1890 to 1,203 million in 1913. Over these twenty-three years, the annual growth of passenger rides averaged 7 per cent, far exceeding the population growth of Paris.[43]

Composition and growth of the demand for recreation

The developments in other recreation products and services are outlined briefly and broadly below. The purpose is to show that the rise of cinema took place during a general rise in demand for recreation products, influenced by the five factors discussed earlier: more time and money,

[42] McCormick (1993); Larroque (1988: 44). [43] *Ibid.*: 58.

urbanisation, new transport networks and population growth. This is necessary to show that the rise in expenditure on spectator entertainment was not simply a redistribution of existing recreation expenditure, but was indeed connected to these five underlying forces. The other recreation products and services are divided here into four groups: media products, outdoor recreation, sports, and drugs, such as drinking and tobacco. In most of these groups changes took place that looked like those happening in live entertainment.

Media products

The demand for media products grew sharply. In the press, new types of printing presses made cheaper mass-printing possible, and quality was increased at the end of the nineteenth century by the printing of photographs, and some time later by the ability to add colour. Prices came down substantially. Urbanisation and transportation innovation made rapid, cheaper, and wider distribution possible. In the US, the number of newspaper copies sold per 1,000 inhabitants increased thirteen times, from 33 in 1850 to 371 a century later, an average annual increase of 2.5 per cent. Between 1904 and 1947, periodicals showed a similar increase.[44]

In Britain, expenditure on newspapers increased from £0.23 in 1900 to £0.81 in 1938 (in 1913 pounds), an average growth of 3.4 per cent per year. Between 1900 and 1919, the number of copies sold per 100,000 inhabitants grew 2.7 per cent annually, on average, while real prices remained almost unchanged. The real expenditure on books and periodicals between 1900–1938 grew from £0.18 per capita to £0.64, 3.4 per cent annually, a growth similar to that of newspapers.[45] In 1911, about 1,250 first editions of adult fiction were published in Britain, as well as 950 reprints.[46] The number reached a peak of about 2,000 first editions and 2,900 reprints in 1935, which comes to an average annual growth of 3.4 per cent in the number of published editions – which does not necessarily reflect the growth in the number of copies sold.[47] Editions of all classes of books grew from 8,500 first editions and 2,400 reprints in 1911 to 11,500 first editions and 5,000 reprints in 1935, an average annual growth rate of 1.7 per cent.[48]

A similarity between the development of publishing and the industrialisation of spectator entertainment is that the fixed or sunk cost of

[44] United States Department of Commerce (1975: 809).
[45] See figure 3.5, below. [46] McAleer (1992: 43).
[47] For comparison: in 1938, about 1,900 first and 2,350 reprints were published, lowering the average annual growth rate between 1911 and 1938 to 2.47 per cent. *Ibid.*
[48] *Ibid.*: 45.

making the first copy, the prototype, increased markedly, while marginal costs, the costs of copies of the prototype, fell sharply. The defining feature of media products is the huge discrepancy between fixed costs and marginal costs, with marginal costs practically being zero compared to fixed costs. Because of technological innovations, market expansion and spatial concentration, most media products even experienced a widening of the difference between fixed and marginal costs during the nineteenth century. For periodicals and newspapers, for example, the editorial staff was often enlarged and specialised; brand-name journalists were hired or created, advertising expenditure was greatly increased while prices fell and total sales boomed. Technical quality improved, because of the printing of photographs, and later colour. Sales of cheap popular novels, often serialised, also boomed. A few specialised publishers dominated the international exploitation of these serials and the trade in their rights.[49]

Another media product was the phonograph and phonograph recordings, of which sales increased markedly. However, the phonograph recording remained a somewhat elite product, and only in the 1950s would it become a mass product to the same extent as cinema.[50] In Britain, expenditure on rolls and disks for the phonograph and gramophone increased considerably over the period. Total expenditure increased thirteen times, from £148,889 in 1905 to £1,988,298 in 1930, in 1913 pounds, while per capita expenditure grew twelve times, from £0.003 in 1905 to £0.043 in 1930, and expenditure as a percentage of national income increased six times. Average annual per capita growth amounted to 10.6 per cent a year, four times as much as spectator entertainment.[51] Nevertheless, the absolute expenditure was relatively small.

The production of another media product, the piano, also increased considerably, in the US from the production of 43 per 100,000 inhabitants in 1850 to 451 in 1909, an average growth of 4.1 per cent a year. Since protective tariffs kept out imports, and exports remained small, production figures give a good impression of the development of the market for pianos in the US. Comparison with the other media figures

[49] Le Roy and Billier (1995: 19–20), for example, discuss how the Eclair film company bought the rights to the popular *Nick Carter* detective serial novels from the German publisher Eichler, who in turn had acquired the European rights from the American publisher Street & Smith (together with the *Buffalo Bill* serial novel). One weekly instalment cost ten cents in New York and 0.25 francs in Paris.

[50] Gelatt (1977); Read and Welch (1976); Gronow and Saunio (1998).

[51] 'The demand for Gramophone records. A review of Gramophone record sales between the years 1905 and 1951', Controller's Department – Economics Section, 1 August 1952; 'Statistics mailed to Statistical Department', Managing Director Minutes, EMI Archives, London.

above is difficult, as this is a stock rather than a flow. After 1909 piano production decreased markedly and persistently. Initially the decrease was moderated by the automatic piano, the production of which increased over 15 per cent annually between 1900 and 1919.[52] The coming of radio and sound films in the 1920s seems to have dealt the final blow: piano sales collapsed from $94 million in 1926 to $38 million in 1928. Sheet music sales fell less sharply, from $3.5 to $2.1 million, while the radio audience doubled.[53]

In Britain, piano production increased from about 67 per 100,000 inhabitants in 1870 to 156 in 1910, an average growth of 2.1 per cent a year.[54] The popularity of the medium is probably severely underestimated by this increase in stock. Cyril Ehrlich estimates that copies of sheet music sold increased between fifty and a hundred times during the nineteenth century, while the price of a copy remained unchanged.[55] Figures on piano production in France also suggest an increase. The output of four of the largest firms increased from 2,800 pianos in 1850 to a peak of 8,100 in 1910, an annual average growth of 2.7 per cent. Combined output of fourteen representative French manufacturers doubled from 7,160 pianos in 1880 to 14,600 in 1910, an annual average growth of 2.4 per cent.[56]

One of the fastest growing media products was radio. In Britain, for example, the number of radio licences increased from 125,000 in 1923 to 8.5 million in 1938, or from 280 licences per 100,000 inhabitants to 18,084 licences per 100,000 inhabitants – an average annual growth of 32 per cent.[57] In France, licences increased from 1.4 million in 1933 to 4.7 million in 1938, or from 3,265 licences to 11,215 licences per 100,000 inhabitants – an average annual growth of 28 per cent.[58]

This increase in expenditure on other media products suggests that the growth in demand for spectator entertainment was not the consequence of a shift in monetary and time expenditure from one media product to the other. It was part of a widespread increase in media expenditure.

[52] Ehrlich (1990: 128–42). [53] Butsch (1990: 18).

[54] Ehrlich (1990: 157). In 1870, contemporary estimates put production at 20,000–25,000 pianos, while Ehrlich estimates the very minimum to have been 23,000. In 1910, contemporary estimates put production at 75,000 to 100,000, while Ehrlich estimates a 50,000 minimum.

[55] Ehrlich (1986: 102). The US sales figures quoted above suggest that by the 1920s sheet music sales had become rather limited.

[56] Ehrlich (1990: 110). Per 100,000 inhabitants the latter growth rate was only slightly lower: 2.25 per cent a year. The rate does not necessary reflect French piano sales, as imports and exports are unknown.

[57] Mitchell (1998: 757). [58] *Ibid.*: 755.

Sports

In sports, a distinction can be made between paid sport matches and amateur activities. Paid attendance at sports was small in comparison to live entertainment, if the years for which comparable figures are available are taken. In the US, in 1921, the first year for which figures are available, total consumer expenditure on sports matches was $16.7 million, about one twentieth of total expenditure on live entertainment and cinema.[59] Baseball attendance, for which earlier figures are available, grew from 4,645 match attendances per 100,000 inhabitants in 1901, to a peak of 8,731 in 1921, after which it declined to 7,659 by 1940.[60]

In Britain, real expenditure on sports and games tripled from £0.19 per capita in 1900 to £0.57 in 1919, an average annual increase of 6 per cent.[61] The rise in sports expenditure is also illustrated by the increase in revenue from tickets of the National Football League, which increased from £1,373,000 in 1927 to £1,711,957 in 1937, to £2,404,098 in 1947, in constant (1913) pounds. This amounts to a real annual average growth in revenue of 2.4 per cent per year per inhabitant between 1927 and 1947.[62]

English First-Division League football attendance increased from 602,000 persons in the 1888–89 season, to 8,778,000 persons in the 1913–14 season. The average attendance per match increased from 4,600 to 23,100 persons.[63] The average crowd at the cup final in England increased from 4,900 over the years 1875–84 to 79,300 over the years 1905–14.[64] The cup final attendance for the Challenge Cup of the Rugby League increased from 13,492 in 1897 to 22,754 in 1914.[65]

Contrary to live entertainment and cinema, where the audience consisted of men and women, divided almost evenly on average, attendance at paid sports matches was a predominantly male activity.

Non-market entertainment also increased between the late nineteenth century and the Second World War. Members of bowling associations in the US, for example, increased from 7 per million inhabitants in 1896 to 6,565 in 1941. An increase in organisational complexity, similar to that observed in live entertainment, may also have taken place, as the number of members per bowling alley increased from 9 in 1924 to 26 in 1941. Likewise, the number of softball diamonds increased from 11 per million inhabitants in 1924 to 92 in 1941; baseball diamonds from

[59] United States Department of Commerce (1975: 401); in 1913 dollars. [60] *Ibid.*
[61] See figure 3.5, below. [62] Dobson and Goddard (1998).
[63] Vamplew (1988: 65). Average annual growth rates were 11.3 per cent and 6.7 per cent, respectively.
[64] *Ibid.* [65] *Ibid.*: 66.

22 to 30; and tennis courts, from 43 to 92.[66] This surge makes it improbable that demand for market entertainment simply boomed because consumers substituted it for non-market entertainment and leisure activities.[67]

Other outdoor recreation also increased markedly, stock indicators for the US suggest. The number of bathing beaches, for example, grew from 1.7 per million inhabitants in 1916 to 4.4 in 1941, and the number of swimming pools tripled from 3 in 1915 to 10 in 1941. Supervised playgrounds per million inhabitants grew from 13 in 1910 to 73 in 1941, as child labour had been abolished and consumers started to invest more time and money in the raising of children.[68] This rapid longer-term growth in the stock of service-providing facilities suggest that actual consumption, the flow, must have increased even more quickly.

An increased craving for the leisurely exploration of nature also surfaced. Visits to US national parks grew explosively from 1,473 per million inhabitants in 1904 to 159,532 in 1941, visits to forests from 40,383 in 1924 to 135,253 by 1941. The number of US consumers holding a hunting licence grew from 4 per cent of population in 1923 to 6 per cent in 1941.[69]

In France, a similar rise in non-market recreation is suggested by the strong growth of sports clubs. The clubs associated to the Union des Sociétés de Gymnastique de France (USGFA) increased from 14 in 1890 to 1,640 in 1914.[70] For comparison, in 1909, when 1,124 USGFA clubs existed, with about 200,000 members, an additional 1,100 clubs of the competing Société de Gymnastique existed, also with 200,000 members. In the same year, France counted 800 associated cycling clubs with about 150,000 members, 320 'Sociétiés d'Instruction Militaire', military training clubs, with 70,000 members, 20 boxing clubs with 15,000 members and 250 swimming clubs with 27,500 members.[71]

In the arrondissements of Rouen and Le Havre, the number of cycling clubs increased from 9 in 1890 to 113 in the 1930s;[72] football clubs from

[66] US Department of Commerce (1975).

[67] 'Non-market' entertainment often had a monetary cost, such as membership fees, subsidies, equipment cost or sportswear cost, but these moneys generally were not paid to profit-seeking organisations.

[68] United States Department of Commerce (1975: 398–9).

[69] *Ibid.*

[70] Arnaud (1991: 62.)

[71] *Ibid.*: 30. These were all associated to a national organisation. Probably many unassociated clubs also existed.

[72] Manneville (1992). These are the cumulative of newly created societies. Actual figures may have been lower if some societies disappeared. For example, in the 1890s twenty-three clubs were founded and in the 1930s, eighteen.

just 2 in 1896–1900 to not less than 208 in 1931–40;[73] gymnastics clubs from 5 in the 1870s to 123 in the 1930s;[74] and other sports clubs from 2 in 1872–90 to 258 in the 1930s.[75]

Legal drugs

Another form of leisure spending and entertainment was drinking. In the US, alcohol consumption actually declined from 6.3 per cent of consumer expenditure in 1909 to 3.3 per cent in 1919, but reached 5.0 per cent in the late 1930s, after the prohibition era had ended.[76] In Britain, alcohol expenditure grew from £3.96 per capita in 1870 to £6.84 per capita in 1919 (in constant 1913 pounds), which amounted to a real annual average growth of 1.1 per cent.[77] Spirits were more associated with leisure and recreation than drinks such as beer or wine, which were also consumed regularly with daily meals. Real spirit expenditure per capita grew more slowly than alcohol as a whole, with 1.0 per cent annually. In all, alcohol expenditure grew at the same pace, or somewhat more slowly than real wages, suggesting that it was not a luxury.[78] The quantity of alcohol consumed declined from the latter part of the nineteenth century onwards. From the 1830s to the 1870s, it had steadily increased, until it reached a peak in the period 1875–9. At that time, consumption was 1.2 gallons per capita of spirits and 33.2 gallons per capita of beer. By 1910–14, this had declined to 0.7 and 27.0 gallons.[79]

In France, consumption of wine grew from 86 litres per inhabitant per year in 1831–34 to 136 litres in 1870–74, to 194 in 1922–34. Over the same period beer consumption increased from 9.4 to 19.8 to 29.4 litres. Consumption of spirits grew from 1.23 litres to 2.57 to 3.3 litres. A peak was reached in 1900–04, with four litres per inhabitant. Afterwards, drinking of spirits declined.[80]

Expenditure on alcohol did not increase nearly as spectacularly as all the other entertainment indicators above. This suggests that drinking may have been partially substituted by entertainment. The temperance movement, which was concerned with the education and development

[73] *Ibid.*: 137. In 1896–1900 two football clubs were founded, in the 1930s, eighty-seven.
[74] *Ibid.*: 138. In the 1870s three new clubs were founded, in the 1930s, thirteen.
[75] *Ibid.* In 1872–1890 2 clubs were founded, in the 1930s 101 clubs.
[76] Dewhurst (1955: 124). [77] Stone (1966: 75–88).
[78] See the real wage figures above, which show a 1.08 per cent annual increase in real wages between 1881 and 1913, and an approximate 1.86 per cent annual increase between 1881 and 1938.
[79] Treble (1979: 115). See also Dingle (1972).
[80] Nourrisson (1990: 321). Consumption of cider decreased from 26 litres per inhabitant per year in 1831–4, to 24 litres in 1870–4. It then increased to 34 litres in 1922–4.

of the masses, tried to encourage substitution in this direction, promoting 'rational recreation'. Yet many forms of live entertainment would not have pleased them as contributing to the education of the working classes.

Consumer expenditure on another drug, tobacco, did also not increase much between 1900 and 1940. In the US, it increased from 2.2 per cent of total expenditure in 1909 to 2.4 per cent in 1919, and to 2.6 per cent in the late 1930s. The stability of expenditure was caused mainly by an innovation, cigarettes, of which consumption increased enormously, while it fell for other tobacco products such as cigars.[81] Prohibition might have encouraged people to substitute smoking for drinking.

The data discussed above are of varying types and are difficult to compare because of differing time spans, units, accuracy of measurement and reporting. To overcome this, all time series data are converted into real per capita growth rates. This method of informal comparative growth analysis makes the data more comparable across expenditure items and countries. The combination of quantity and expenditure growth rates also allows ballpark estimates of real and relative price growth rates. This method is far from perfect and not very precise, but it offers an alternative way of comparing different types of incomplete historical data. It is no more than a rough-and-ready approach to get insight into the order of magnitudes of growth of leisure spending and on relative growth rates. Since data are for three countries and for differing time-spans, aggregate growth rates do not accurately reflect 'real' national growth rates. They are no more than abstract constructs that shed some limited light on relative growth rates in the absence of complete and fully comparable data series.

For printed media, audiovisual media, sports, non-market entertainment and alcoholic drinks growth rates have been calculated from dispersed data sources (table 3.4). Except for drink, these rates suggest that the increasing demand for spectator entertainment was part of a broad-based boom in demand for recreation as a whole, both for commercially provided and non-commercial recreation.

Although the consumption of all goods grew rapidly, audiovisual entertainment consumption grew about twice as fast as the over-all average, while expenditure increased only slightly above average, suggesting that the surge in quantity was hidden by an exceptional fall in price. This was at least partly brought about by substitution of filmed for live entertainment. Even compared to prices of other leisure goods, entertainment prices fell substantially. If the growth rates are hypothetically applied to the whole 1890–1938 period, audiovisual prices in

[81] Dewhurst (1955).

1938 were only 61 per cent of what they had been in 1890 measured by quantity of printed matter, only 74 per cent measured in sports tickets, and only 45 per cent measured in drinks.[82] Three audiovisual goods with high growth rates – the automated piano, cinema and radio licences – brought up the average growth considerably.

The growth intensity for sports suggests substantial scale effects, as recreation facilities attracted and could handle more and more consumers. A year-on-year growth of about 6 per cent in utilisation, even if we allow for additional capital to build larger venues, was phenomenal (table 3.4). It resulted in venues that in 1938 would be sixteen times as large as those in 1890. Urbanisation and transport networks also contributed to increased utilisation. The scale effects probably also mitigated potential price rises, as average costs would come down substantially and continuously, until full venue size was reached.

The growth of non-market goods was surprisingly fast, and shows that increased cinema consumption cannot be fully explained by consumers substituting informal, traditional, non-market recreation for commercialised entertainment. The rapid increase in leisure time, the efforts of states and communities to provide leisure goods, and the low price of non-market recreation probably all played a role. The similar growth rate of audiovisual products and non-market recreation could have been driven by public-good characteristics. Both had a strongly non-diminishing character. An additional person watching a film did not deplete the copyright, and hardly depleted the celluloid, an additional person visiting a national park or a playground diminished the resource only at a low rate. Both also had some non-excludability properties: only copyrights enabled strong excludability for filmed entertainment, and radio and television were largely non-excludable. Likewise, although possible, it was not easy to exclude people from national parks, playgrounds or public softball diamonds. High fixed and sunk costs in both cases meant that average costs would decrease over a long interval – for films even when sales equalled the entire market – so that prices could be relatively low in competitive situations or when a social planner wanted to maximise total economic welfare.

It is probably going too far to say that the boom in demand for live entertainment directly forced the take-off of cinema. Nevertheless, without sharply rising demand, for a long time the cinematograph would have remained what it had been during its first years: a novelty, a specialty, a luxury product every now and then shown in theatres and schools, or occasionally by travelling showmen. Cinema would not have

[82] For a more comprehensive 'growth simulation', see Bakker (2007a).

Table 3.4 *Per capita growth of leisure goods and services, US, Britain and France, 1832–1950, quantity, real expenditure, intensity and informal averages*

Category	Product	Country	Period		Growth per capita per annum		Intensity	Price	Rel. price	Price after 48 years
					Quantity	Expenditure				
Unweighted averages										
	Printed		1897	1937	2.53	3.38		0.33	−1.03	0.61
	Audiovisual		1898	1931	10.85	3.28		−0.70	0.00	1.00
	Sports		1901	1923	4.55	4.18	6.50	−0.08	−0.62	0.74
	Non-market		1913	1941	7.76		6.07			
	Drink		1860	1903	0.57	1.12		0.97	−1.66	0.45
	Grouped average		1894	1927	5.25	2.99	6.29	0.13	−0.83	0.67
	All-item average		1894	1927	5.78	3.27	6.40	−0.39		
Coefficients of variation										
	Printed		1850	1950	0.21	0.00				
	Audiovisual		1850	1940	1.01	1.31				
	Sports		1875	1947	0.96	0.42	0.41			
	Non-market		1896	1941	0.64					
	Drink		1832	1923	1.98					
	Grouped average		1861	1940	0.96	0.43	0.21			
	All-item average									
	Printed									
	Newspapers	US	1850	1950	2.45					
	Periodicals	US	1904	1947	2.40					
	Newspapers	UK	1900	1938		3.37				
	Newspapers	UK	1900	1919	2.68					

	Books and periodicals	UK	1900	1938		3.39			
	Published editions of adult fiction	UK	1911	1935	3.39				
	Publ. editions all classes of books	UK	1911	1935	1.74				
	Unweighted average	US,UK	1897	1937	2.53	3.38	0.33	−1.03	0.61
	Standard deviation		1850	1950	0.53	0.01			
	Coefficient of variation				0.21	0.00			
Audiovisual									
	Piano	US	1850	1909	4.10				
	Automated piano	US	1900	1919	15.00				
	Piano	UK	1870	1910	2.10				
	Piano	FR	1850	1910	2.25				
	Phonograph rolls and discs	UK	1905	1930		10.60			
	Cinema and live entertainment	US	1900	1938	5.59		−0.66	−0.04	0.98
	Cinema and live entertainment	US	1909	1938		2.29			
	Cinema and live entertainment	US	1900	1940		2.79			
	Cinema and live entertainment	UK	1900	1938	2.63	2.72	0.03	−0.73	0.70
	Cinema and live entertainment	UK	1881	1938		2.50			
	Cinema and live entertainment	FR	1900	1938	5.99		−0.56	−0.14	0.94
	Cinema and live entertainment	FR	1914	1938		2.63			
	Live entertainment	US	1909	1938		−3.83			
	Live entertainment	UK	1881	1900		1.92			

Table 3.4 (*cont.*)

Category	Product	Country	Period		Growth per capita per annum		Intensity	Price	Rel. price	Price after 48 years
					Quantity	Expenditure				
	Live entertainment	UK	1900	1938		0.02				
	Live entertainment	FR	1914	1938		−1.29				
	Cinema	US	1909	1940		10.99				
	Cinema	FR	1914	1938		8.06				
	Radio licences	UK	1923	1938	32.00					
	Radio licences	FR	1933	1938	28.00					
	Unweighted average	US, UK, FR	1898	1931	10.85	3.28		−0.70	0.00	1.00
	Standard deviation		1830	1940	10.92	4.30				
	Coefficient of variation				1.01	1.31				
Sports										
	Baseball attendance	US	1901	1921	3.21					
	Baseball attendance	US	1921	1940	−0.01					
	Sports and games	UK	1900	1919		5.95				
	National Football League Revenue	UK	1937	1947		2.41				
	First Division League Football attendance	UK	1888	1913	10.45					
	First Division League Football attendance per match	UK	1888	1913			6.67			
	Cup Final average crowd	UK	1875	1914			9.72			

	Rugby League attendance cup final	UK	1897	1914			3.12			
	Unweighted average	US,UK	1901	1923	4.55	4.18	6.50	−0.08	−0.62	0.74
	Standard deviation		1875	1947	4.37	1.77	2.70			
	Coefficient of variation				0.96	0.42	0.41			
Non-market										
	Membership bowling associations	US	1896	1941	15.00					
	Member per bowling alley	US	1924	1941			6.07			
	Softball diamond per capita	US	1924	1941	13.41					
	Bathing beaches	US	1916	1941	3.86					
	Swimming pools	US	1915	1941	4.52					
	Supervised playgrounds	US	1910	1941	5.58					
	Visits to national parks	US	1904	1941	13.90					
	Visits to forests	US	1904	1941	3.41					
	Hunting licences	US	1923	1941	2.41					
	Unweighted average	US	1913	1941	7.76		6.07			
	Standard deviation		1896	1941	5.00					
	Coefficient of variation				0.64					
Drink										
	Alcohol	UK	1870	1919		1.12				
	Spirits	UK	1877	1912	−1.67					
	Beer	UK	1877	1912	−0.59					
	Wine	FR	1832	1872	1.15					
	Wine	FR	1872	1923	0.70					
	Beer	FR	1832	1972	1.88					

Table 3.4 (*cont.*)

Category	Product	Country	Period		Growth per capita per annum		Intensity	Price	Rel. price	Price after 48 years
					Quantity	Expenditure				
	Beer	FR	1872	1923	0.78					
	Spirits	FR	1832	1872	1.86					
	Spirits	FR	1872	1923	0.46					
	Unweighted average	US,UK, FR	1860	1903	0.57	1.12		.097	−1.66	0.45
	Standard deviation		1832	1923	1.13					
	Coefficient of variation				1.98					

Intensity = attendance/production per unit, e.g. number of spectators per stadium, users per bowling alley, etc.
Rel. price = the percentage per annum with which the price difference between the good in question and audiovisual goods changes.
Price after 48 years: this is the change in the hypothetical relative price of audiovisual goods compared to the good in question, applying the growth rates to 1890–1940; for example, in 1938, the relative price of audiovisual entertainment, expressed in printed matter, was 61 per cent of what it had been in 1890.
Averages: these are informal, unweighted averages of incomplete sets of growth rates covering different time-spans, different products and different countries.
Sources: see the text of this section.

taken off as a large-scale industry.[83] The huge growth burst of demand enabled cinema to develop into a big business with its own dedicated distribution–delivery system. Without this boom in demand, the market would probably have been too small for a separate distribution–delivery system, and costs sunk in film productions would have had to remain limited, hampering the possibility of films rapidly increasing their audience. Prices of film performances would probably have remained closer to the prices of theatre and big-time vaudeville, further complicating any take-off of a new industry.

The evolution of demand for spectator entertainment

In the US between 1909 and 1923, expenditure on cinema grew rapidly, whilst expenditure on live entertainment fell (figure 3.4). Between about 1923 and 1925, the former stabilised and the latter rebounded. Then, from 1927 onwards, when talking pictures were introduced, cinema expenditure grew rapidly again, while live entertainment expenditure imploded, well before the Depression started. During the early 1930s, cinema expenditure continued to grow, probably because talkies were still a novelty, and very cheap as well. For many consumers the opportunity costs of entertainment activities decreased sharply, together with their spending power. They thus were encouraged to substitute even more cinema for live entertainment. Since World War I, expenditure on live entertainment has remained several times lower than that on cinema, despite the early 1920s and 1940s rebounds, which both coincided with the economy moving out of a recession.

Motion picture spending grew remarkably, from 0.22 constant dollars per capita in 1909 to $5.57 in 1940, an 11 per cent annual growth. Live expenditure decreased 3.8 per cent per year, from $1.81 in 1909 to $0.54 in 1940. Expenditure on tickets for sports matches increased gradually, but until the mid-1930s remained marginal compared to cinema and live entertainment. Afterwards, it temporarily overtook live expenditure.

In Britain in the early 1880s, in his attempt to construct a national account the economist Leone Levi estimated expenditure on 'amusements'

[83] At best, without the boom in demand, cinema might have suffered the same fate as the phonograph, which for years remained an expensive elite product, both because of its consumers and because of its musical styles. It did not reach the same number of consumers as cinema. Only in the 1950s with its affluent teenagers did the phonograph become a mass product, and the music business become a bit more like the film industry. See, for example, Bakker (2006).

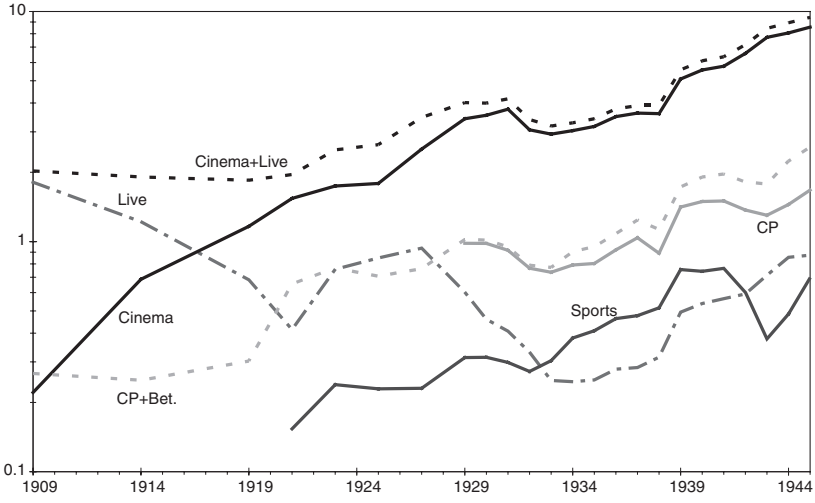

Figure 3.4 US consumer expenditure on spectator entertainment, in 1913 dollars per capita, 1909–1945

Notes: Live = theatre (plays, operas, vaudeville, music hall, etc.), entertainment of non-profit institutions, except athletics.
CP = commercial participant entertainment.
Source: disaggregated amounts of cinema and live expenditure from 1909–19: estimates, based on total amount spent on live and cinema together, the growth of the number of cinema seats between 1909 and 1919, prices and the 1917–19 US Department of Labor budget study. All other amounts: US Department of Commerce (1975: 401).

and 'science and books' to be £12.6 million and £12 million.[84] Amusements were split into £6.5 million for theatres and £6.1 million for 'other amusements'. Per capita expenditure amounted to £0.36 on 'amusements' and £0.34 on 'science and books' (in 1913 pounds).

'Theatres' probably concerned only legitimate theatres, and not music halls, penny gaffs and the like. Those were put almost certainly under 'amusements'. Combining the two expenditures with the number of venues yields an average revenue of £42,763 per theatre, which is not totally improbable. Mulhall gave the annual revenue of London theatres in the early 1880s as £1,320,000,[85] which would be 20.3 per cent of total British theatre revenue, if combined with Levi's figures. This also not improbable, although somewhat low.

An early survey makes an estimate possible for expenditure in 1889.[86] Average household outlays on 'amusements and vacations' and on

[84] Levi, Jevons Bourne *et al.* (1882). [85] See Chapter 2. [86] See Chapter 4.

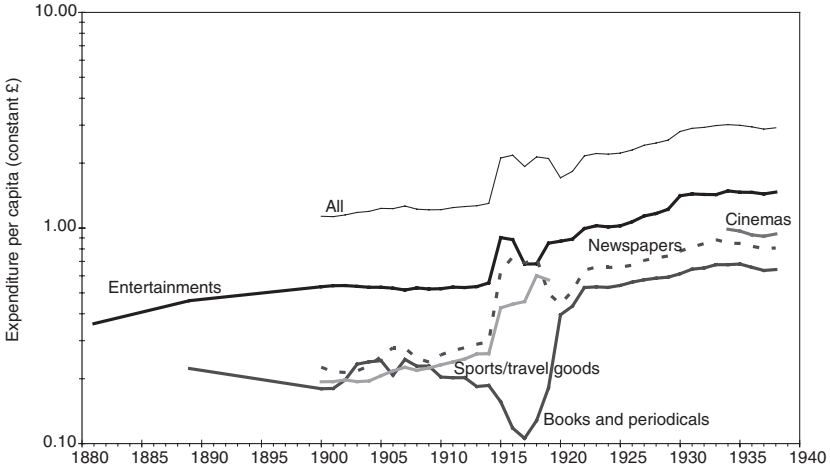

Figure 3.5 Real consumer expenditure on various entertainment items, Britian, 1881–1938, in 1913 pounds

Note: After 1919, Ireland is excluded from the United Kingdom. From 1900 'Entertainments' expenditure includes admissions to sports matches (contrary to the US and French data). For the tax year 1937–8, sports admissions accounted for about 9.5% of all admissions (Stone 1966: 81), and for far less, possibly half as much, of expenditure (see also figure 3.8, below).

Source: 1881: Levi (1881, 1882). 1889: US Commissioner of Labor Survey. 1900–1919: Prest (1954). 1920–1938: Stone (1966).

'reading matter' were $18.65 and $4.82. As the average family size was 4.95 persons, this comes down to $3.77 and $0.97 per head, respectively. Multiplied by the total population of the United Kingdom, this yields an estimated total expenditure of $176,220,000, or £35,244,744 in 1889. This amounts to £40,511,200 or £1.09 per capita, in 1913 pounds. If spectator entertainment accounted for about 40 per cent of 'amusements and recreation', real entertainment expenditure per capita grew between 2.7 and 3.1 per cent from 1881 to 1889.[87]

Figure 3.5 shows the expenditure on various entertainment items between 1881 and 1938. Five periods can be distinguished: moderate growth between 1881 and 1900, flat expenditure between 1900 and 1913, a war boom from 1914 to 1919, a consistent rise during the 1920s, and finally, a stabilisation in the 1930s. It is likely that the war boom was somewhat limited and that more growth took place between 1900 and 1914, as the figures are more reliable from 1915 onwards, because they

[87] Estimates based on an eight- and nine-year interval, respectively.

are based on entertainment tax returns. Before 1914 the figures were estimated based on Giffen,[88] so the jump in 1915 and the subsequent fluctuations may be caused by an estimate with a wide margin of error being replaced by precise figures, by irregularities in the first years of the entertainment tax returns, by mobilisation and by the large influx of American soldiers. The war boom in entertainment is well documented.[89] Because entertainment required few scarce raw materials and production capital, prices did not tend to increase much and rationing was not necessary.

Between 1900 and 1913 the flat total real entertainment expenditure may hide a process similar to that in the US, in which cinema was substituted for live entertainment. This means that total spectator-hours consumed must have grown considerably. Until the 1920s, total US expenditure on spectator entertainment was flat. Whether expenditure also boomed during the war cannot be inferred completely, as official figures are available for 1914 and 1919 only. The US showed a consistent rise in expenditure during the 1920s, and a stabilisation, not a fall, in the 1930s.

In Britain expenditure on sports, travel goods and newspapers had a similar growth pattern as spectator entertainment. The exceptions were books and periodicals, which showed a war bust, probably because of paper rationing and consumers preferring newspapers.

Despite the substitution of lower-cost for high-cost entertainment, over the long term real spectator entertainment expenditure grew 2.5 per cent per capita annually between 1881 and 1938, the same as total recreation expenditure, which grew 2.5 per cent. This was substantially above the growth rate of real wages, which amounted to about 1.9 per cent.[90] In the long run, therefore, entertainment was a luxury. Given the price decrease, growth would have been even higher in quantity terms.

Britain experienced an average annual expenditure growth per capita of 2.7 per cent between 1900 and 1938, and the US 2.3 per cent between 1909 and 1938. If the years 1900–08, in which demand was stagnant, are ignored, Britain showed a high growth rate during 1909–38. Since after 1938, US entertainment expenditure increased rapidly, British long-run real growth may not have been higher than US growth. If, for the US, 1900–40 is taken, average annual growth increases to 2.8 per cent, slightly above the British rate.

[88] Giffen (1903). [89] See, for example, Roshwald and Sites (1999).

[90] Estimate based on two time series in Mitchell (1998: 182, 184) and Mitchell's consumer price deflator (847, 849). Wages grew 1.04 per cent annually for 1881–1913 and 2.96 per cent for 1914–38. The two series do not overlap. The two rates were therefore combined in a 56-year period to estimate average annual growth.

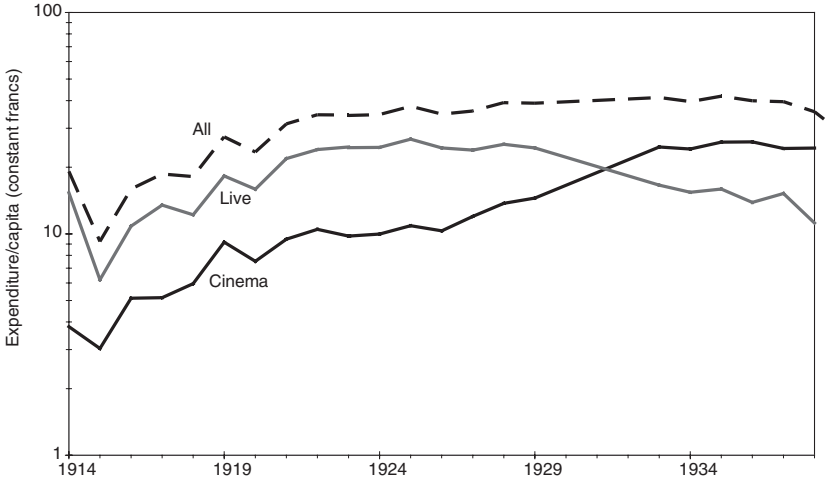

Figure 3.6 Real annual per capita expenditure on spectator entertainment in France, in 1929 francs, 1914–1938
Source: Cinématographie Française (1930, 1935); Durand 1956: 213.

Until the late 1920s, French live entertainment consumption was over two times that of cinema (figure 3.6).[91] This differed from the US, where cinema overtook live in the mid-1910s, when feature films emerged.[92] French live entertainment was better able to withstand the competition from cinema. Even if the Paris/national factor is increased to 0.55 or 0.75 for live entertainment only, the latter's consumption remains above cinema's and the difference with the US persists.

Only with the coming of sound did live entertainment consumption decrease sharply, to almost the same degree as cinema expenditure increased. The pace of substitution may be slightly overstated (in figure 3.6), as Paris cinemas were earlier to adopt sound than those in the provinces. At the end of the 1930s, both live entertainment and cinema expenditure decreased sharply, partly because of the outbreak of war.

If households in the 1890 survey spent only 40 per cent of 'amusements and vacation' on spectator entertainment, and if this was representative for all of France, entertainment expenditure in 1890 was higher than in the early twentieth century: 41 constant francs, versus, for example, 34 constant francs in 1923.[93] If the estimate is accurate, this

[91] The estimates are based on Paris revenue figures and the assumption that Paris accounted for about 40 per cent of both cinema and live revenues (for cinema this is consistent with post-1927 national and Paris data). For details, see Bakker (2001b).
[92] See above. [93] See Chapter 4.

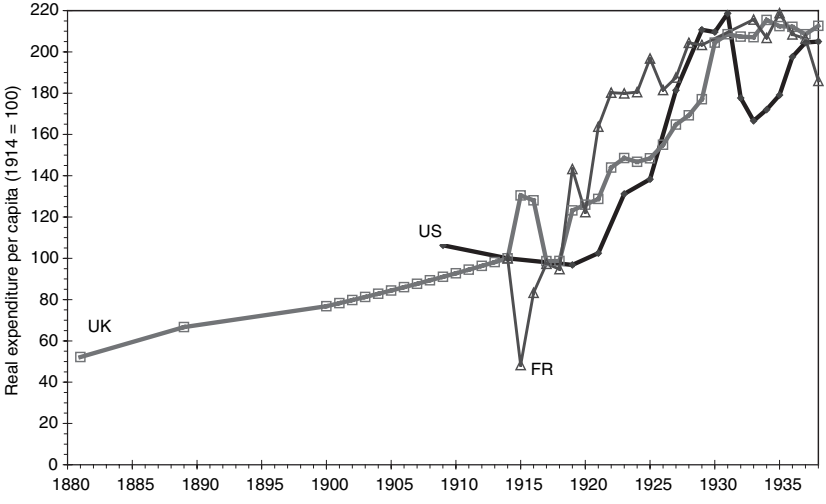

Figure 3.7 Real entertainment expenditure per capita, US, Britain and France, 1881–1938 (1914=100)
Note: From 1900 onwards the UK index includes admissions to sports matches (see figure 3.5).
Source: Bakker (2001b).

suggests that real live entertainment expenditure was declining mildly between 1890 and 1914. This could have been caused by the substitution of cheap cinema for more expensive live entertainment, as happened in the US.

For all three countries between the 1890s and the 1930s, over all per capita expenditure showed a similar long-run growth pattern (figure 3.7). Average growth rates, although not having entirely identical periods, were within a narrow range of 2.3 and 2.7 per cent per annum (table 3.5).

In the short run, substantial differences existed. Entertainment expenditure moved in opposite directions in France and Britain during World War I, while remaining stable in the US, and during the Depression US real expenditure shrank substantially. Moreover, the French level of expenditure was substantially lower than elsewhere, about a fifth in 1938, using exchange rates. Quantification of the difference is difficult because of the franc's devaluation and purchasing power parity issues.[94] French expenditure also fluctuated more.

The relative similarity of overall entertainment expenditure, however, hides sharp differences in its composition. In the early 1910s, the US

[94] See Chapter 11.

Table 3.5 *Average annual growth of real entertainment expenditure, US, Britain and France, 1881–1938*

	US	UK	FR
		Cinema and live	
1881–1938		2.50	
1900–1938		2.70	
1909–1938	2.29		
1914–1938			2.63
1934–1938		−0.33	
		Cinema	
1881–1938			
1909–1938	10.99		
1914–1938			8.06
1934–1938		−1.24	
		Live	
1881–1938		0.82	
1900–1938		0.02	
1909–1938	−3.83		
1914–1938			−1.29
1934–1938		1.38	

Source: Bakker (2001b; 2004a).

and French expenditure shares of live entertainment were roughly the same, but subsequently the American share declined sharply until 1921 (figure 3.8). From then on the difference remained roughly the same and expenditure appears to have declined in both countries at a similar rate when talkies arrived (in 1927–29). In expenditure terms sound seems to have made a similar relative impact in France as in the US, although price and quantity data would be needed to investigate this. The sparse UK data suggest that the live expenditure share was similar to that in France, though the quantity mix was rather different, as data for 1938 show.[95]

An explanation for the transatlantic differences might be the US dominance of European cinema screens from the late 1910s. This gave British and French live entertainment a competitive edge that American live entertainment lacked: before the talkies, the French live entertainment industry offered consumers entertainment in the local social, cultural, political and intellectual environment. Afterwards, live entertainment had a second competitive advantage in that it was originally

[95] See Chapter 11.

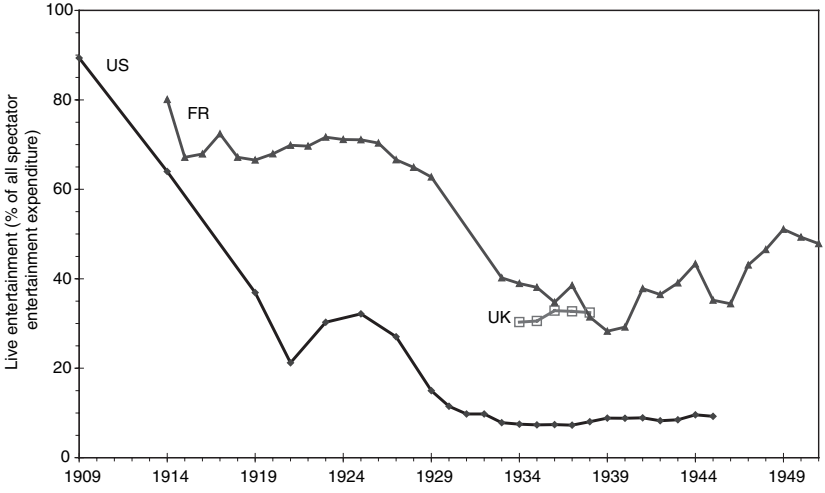

Figure 3.8 Share of live entertainment expenditure in total spectator entertainment expenditure, US, Britain and France, 1909–1951

Note: The British data includes admissions to sports matches, but could not be disaggregated further. For the tax year 1937–8, it was estimated that sports admissions accounted for about 20 per cent of all non-cinema admissions (Stone 1966: 81), and probably for far less of expenditure. Therefore, to estimate the British data for all years, the ticket price for sports matches is set at half the price of live entertainment, which results in the live expenditure share declining by between 2.3 to 2.4 percentage points.

Source: Bakker (2001b); based on US Department of Commerce (1975); Stone (1966); *Cinématographie Française* (1930, 1935); Durand (1956: 213).

spoken in the local language.[96] French, and possibly also British live entertainment consumption may have remained high for these reasons.[97]

The emergence of cinema consumption

It is not easy to establish exactly how the motion picture audiences in the early years were composed, as representative audience surveys are lacking, and modern market research was not yet done by the emerging film companies. The only information that is available is from the

[96] Dubbing still yields a different quality than an original language film.

[97] It may also explain the surprising rebound of French live entertainment expenditure in the late 1940s, when it caught up with cinema expenditure. Possibly because of disruption due to the war, the cinemas could not provide enough locally made entertainment.

general press, the trade press, and company sources that film historians have studied.

Before fixed cinemas emerged, a dual audience for motion pictures existed. At the high end was the upper middle class, who saw the first shows of Lumière's cinematograph, probably in a legitimate theatre as a special event, and later on between the live acts in big-time vaudeville. At the other end, there was the more mixed social cross-section of local communities that came to see the cinema when travelling showmen visited their village or town.[98]

In the US, Nickelodeons, small cinemas of a few hundred seats at low prices, emerged between 1905 and 1907. Their audience seems to have been mixed, with women and children occupying a substantial place – at least half, perhaps even the majority of visitors. Richard Abel relates, for example, how in New York, women often went with their children to the Nickelodeon after or during shopping, as the venues were handily located in the shopping districts.[99] Cinema was consumed by members of both sexes, while football, other sports, drinking and music hall were mostly all-male events. When women were allowed in music halls, it was on the galleries, separated from the men. Compared to the previous entertainments, cinema was thus a whole new experience for consumers.[100]

Little is known about the age of the cinema audience. Most visitors were below thirty or forty.[101] Even so, little is known about the frequency of visits. Persons who happened to live or come into the range of a Nickelodeon regularly, would probably visit it once a week, and others less frequently. The audience is generally thought to have been the less well-off classes, and immigrants who had difficulty with the English language and therefore constituted a natural market for motion pictures.[102] Yet Abel has shown that many of the women who visited the Nickelodeons with their children were actually middle class.[103]

The price of cinema was an important factor in the kind of audience it attracted. Before the Nickelodeon, prices varied from a dollar or more for the first special Lumière events, to between a few cents and 50 cents for travelling showmen.[104] The market was in too chaotic and developing

[98] Musser (1990: 140, 417–20). [99] Abel (1999: 48).

[100] Taylor (1976: 181), for example, writes 'Women joined their husbands in enjoyment, as they had never done at football matches or other public pleasures. '

[101] Abel (1999: 48). [102] Musser (1990: 417–20).

[103] Abel (1999: 48). This book does not aim to investigate cinema audiences socially or culturally. Historical works on audiences, often qualitative, include Sklar (1993); Elsaesser (1994); Bordwell, Staiger and Thompson (1985); Gomery (1992); Hansen (1991); Ross (1998); Staiger (1990); Sedgwick (2000); Richards (1994); Forest (1995); Sadoul (1962); Meusy (1995).

[104] Musser (1990: 299).

a condition to estimate a reliable average price. The fact that cinema was often interspersed with live entertainment makes it even harder to assess.

The prices charged in the Nickelodeon were between 5 and 10 cents, which often enabled the spectators to stay as long as they liked. Around 1910, larger cinemas emerged in fashionable city centre locations, more closely resembling theatres than the small and shabby Nickelodeons, and prices increased. When the feature film had established itself as standard in 1917, the average price was around 20 cents.[105] However, substantial differences existed. In individual theatres, different seats often had different prices. In the larger cities, prices were differentiated among theatres, with the city centre first-run theatres sometimes charging $1 to $1.50 for a performance, while the small and shabby neighbourhood cinema might still charge 5 cents for a sixth run. In between these two were stratifications of other theatres with different prices.[106]

Conclusion

Three main issues are important for the study of the long-run increase in theatrical entertainment consumption: the underlying forces that shaped it, the demand for other recreational items and the aggregate demand for spectator entertainment itself. The underlying forces – more leisure time, money, urbanisation, better transport networks and substantial population growth – all worked in the same direction. They increased demand both for spectator entertainment and for other recreational activities during the late nineteenth century.

Audiovisual entertainment was an essential part of this expansion. It had one of the highest growth rates. The only other category with a similar rate was non-market recreation. Both shared quasi-public-good characteristics, such as a low diminishability and limited excludability per se, resulting in low marginal costs.

The aggregate demand for entertainment grew substantially in all three countries in quantity terms. Expenditure growth, however, remained more limited because cinema was substituted for live entertainment. Especially in the US motion pictures had a devastating effect on live productions, far more so than in Britain or France. Output growth measured in spectator-hours was phenomenal, as Chapter 11 will show in detail. It was hidden by the sharp fall in the average price per spectator-hour.

[105] Koszarski (1990: 13–15).
[106] Sedgwick (1998) examines this price discrimination system in 1930s Britain.

Using consumption data this chapter has corroborated the sharp growth in theatrical production observed in the previous chapter, and placed it in context. In the early twentieth century the entertainment boom led to substantial bottlenecks that induced some entrepreneurs to adopt cinema technology on a large scale. The timing and nature of the take-off will be discussed in Chapter 5. The current chapter has informally and sometimes anecdotally discussed various forms of recreation expenditure. Limits to the available data prevented the presentation of precisely comparable country series for identical time intervals. Making use of unique data, the next chapter, however, will investigate household expenditure in all its microeconomic detail at the cross-section level, for two to four benchmark years per country. This will enable us to systematically compare the expenditure patterns between recreation goods and between countries.

4 The structure of household entertainment expenditure

> What the mass media offer is not popular art, but entertainment which is intended to be consumed like food, forgotten, and replaced by a new dish.
> W. H. Auden

As an addition to the longitudinal analysis of entertainment consumption, this chapter examines the structure of household expenditure at the cross-section for benchmark years to get insight into the structure of demand, the differences between countries and expenditure items, and the way in which these affected the industrialisation of entertainment.[1] This exercise is worthwhile because it throws light on the demand side of the industrialisation, it may help us to understand the consumer side of the quality race discussed in Chapter 6, it sketches the context in which to place the discussions of film consumption and film market research in Chapters 8 and 10, and it helps us to understand in more qualitative terms the background of the counterfactual exercise to calculate social savings and productivity growth in Chapter 11.

The rest of this chapter proceeds as follows: first, household entertainment consumption before cinema will be analysed for the benchmark year 1889/90, making use of a remarkable international survey. Then, using a unique data-set on Boston spectator entertainment and capacities, the structure of demand and its price elasticity will be examined at the cross-section level for 1909, a few years after the industry's take-off, a time when the number of cinemas was growing rapidly. The subsequent section will examine household expenditure after cinema for benchmark years between 1936 and 1938. For the US, the benchmark 1917–19 is also examined, because of the availability of a detailed consumer expenditure survey for that year. A comparative section evaluates the changes in expenditure patterns between the benchmark years, the international differences between these changes, and how these changes could relate to the long-run GDP-elasticity of entertainment expenditure.

[1] More technical aspects of this chapter's findings are reported in Bakker (2007a).

Household expenditure before cinema

Before the late nineteenth century, only anecdotal quantitative information exists on the household demand for entertainment. Michael Mulhall (1892: 360), for example, quotes a French letter of 1679 of Madame de Maintenon, in which she advised her sister, who was married and had ten servants, on household expenses. Of the budget, £600 in total, 53 per cent went to food and rent, and not less than 20 per cent was reserved for opera.

From the mid nineteenth century onwards studies of the conditions of the working classes became more common, many inspired by the pioneering work of Frédéric le Play (1877). These early studies on family budgets seldom looked at expenditures on entertainment and recreation.[2] In most of le Play's reports, they are grouped under 'sundries' and thus invisible. Moreover, the early family budgets may be unrepresentative. Often individual cases were studied elaborately, instead of taking sufficiently large and random samples.[3]

Dorothy Brady (1972) constructed representative sample budgets for American families in the 1830s, slightly above the relevant averages for each of three types of residential location: farm, village and city. All types spent much on reading and recreation, about 2 per cent of all expenditures excluding shelter. Expenditures on church and charity were even higher, varying from 9 per cent for farm families to 3 per cent for city families. These may have been over-reported, as they were considered socially desirable. Charity expenditure probably functioned not unlike social security contributions, especially in the farm and village communities. For comparison, farm families spent more on tobacco than they spent on reading and recreation, 2.5 per cent, while city dwellers spent only 0.8 per cent, and village families were caught in the middle.[4]

Only in 1889 was the first systematic survey done, with a large number of respondents, and a sample that at least partially started to resemble a random sample. Under the supervision of Carroll D. Wright, the US Commissioner of Labor, the US Department of Labor carried out this survey on family expenditure, as part of a study of costs of production in nine protected industries. The survey was made in preparation for the debate on the highly protective McKinley Tariff of 1890. Demographic characteristics, occupations, incomes and expenditure

[2] See also, for example, Horrell (1996). The many early nineteenth century family budget studies Horrell used do not include entertainment expenditure.

[3] On early family budget studies, as early as the middle ages, see Nystrom (1931); Zimmerman (1936).

[4] See also Bakker (2007a).

patterns were recorded for 8,544 families and their members in these industries in 24 states of the US and 5 European countries: Britain, France, Germany, Belgium and Switzerland.[5] The nine industries were bar iron, pig iron, steel, bituminous coal, coke, iron ore, cotton textiles, woollens and glass.[6] In America, the researchers interviewed members of 6,809 families, comprising about 35,500 family members.

Co-operation was solicited from firms, and workers were selected for interview in those that were willing to participate. The survey was not totally random or representative, for three reasons: it selected only workers in co-operating firms, it selected only co-operating workers who could provide information in sufficient detail, and only industrial workers in families were included. However, the research of Michael Haines has shown, that, at least for the United States, comparison with the US census gives some support to the representativeness of the data.[7]

The survey lists several categories related to leisure activities: expenditure on amusements and vacations, reading, liquor, religion and charity. The category 'amusements and vacation' includes live entertainment, but it is impossible to say how much of it was used to go to sports matches, music hall, spectacles, theatre, or to go on day trips and vacations.

The United States

For the US, the average household income of the respondents, $684, was far higher than the national average income of non-farm workers, which was $471 in 1889 and $475 in 1890. The reason for the difference is most likely that more members of the family were working. Expenditure on 'amusements and vacations' was small, only 1.1 per cent of income, on average. Yet this was substantially higher than expenditures on reading, religion and charity (table 4.1). Only expenditures on liquor and tobacco were considerably higher.

The expenditure on amusements relative to income shows a consistent and almost linear increase with income (figure 4.1). The fact that it rose substantially faster than income over all intervals, suggests that it was a luxury good for all income groups alike. This is confirmed by the income elasticity, which is a measure of the responsiveness of the

[5] The author thanks Michael Haines for generously making available the computerised data.
[6] The survey is discussed in detail in Haines (1979). [7] *Ibid.*: 292–5.

Table 4.1 *Household expenditure on leisure goods and services, US, Britain and France, 1889–1890*

	Expenditure (% of income)			Expenditure ($)			Coefficient of variation			Range (max/min)
	US	UK	FR	US	UK	FR	US	UK	FR	
Amusements/vacations	1.10	3.47	3.85	7.53	18.46	15.75	2.82	1.38	1.35	2.45
Reading	0.80	0.90	0.46	5.47	4.79	1.88	1.19	0.93	1.36	2.91
Religion	0.97	0.54	0.18	6.64	2.87	0.74	1.42	1.65	3.02	9.01
Charity	0.40	0.26	0.06	2.74	1.38	0.25	2.43	2.36	6.09	11.15
Liquor	1.80	2.36	5.16	12.31	12.56	21.11	2.39	1.41	1.21	1.71
Tobacco	1.30	1.13	0.99	8.89	6.01	4.05	0.92	1.11	1.18	2.20
Total	6.37	8.66	10.70	43.58	46.08	43.77	1.86	1.47	2.37	1.06

Note: total for coefficient of variation is unweighted average.
Source: Data US Commissioner of Labor Survey 1891, provided by Michael Haines.

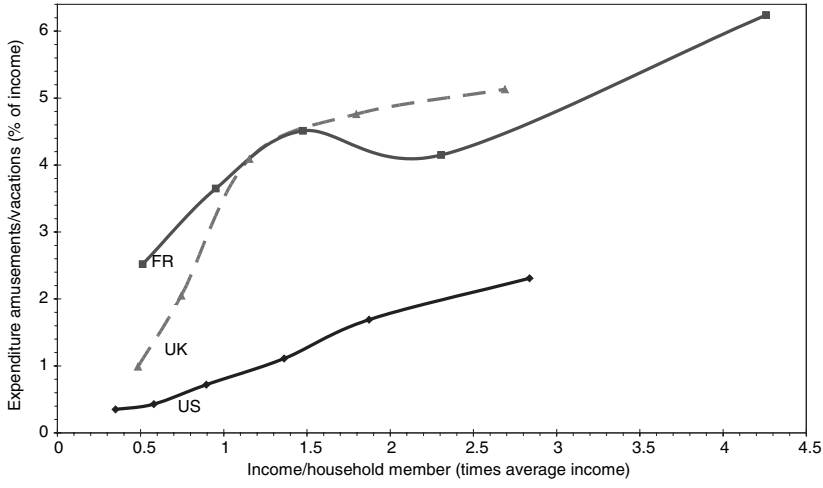

Figure 4.1 Expenditure on amusements and vacations across different income classes, for the US, Britain and France, in times average income, 1889–1890

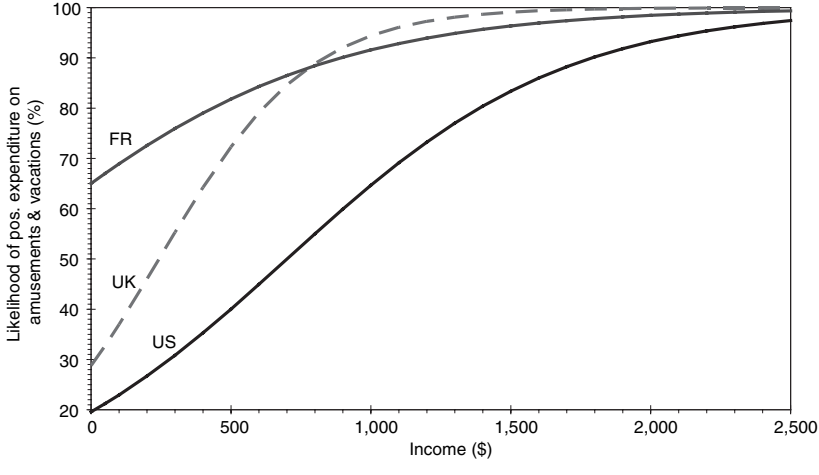

Figure 4.2 Likelihood of positive expenditure of households on amusements and vacations, US, Britain and France, 1889–1890

quantity demanded of a good to the change in the income of the people demanding it. This was above one for households with expenditure on entertainment. Assuming constant elasticity gives an income elasticity of 1.13; assuming diverging elasticities using ordinary least-squares (OLS)

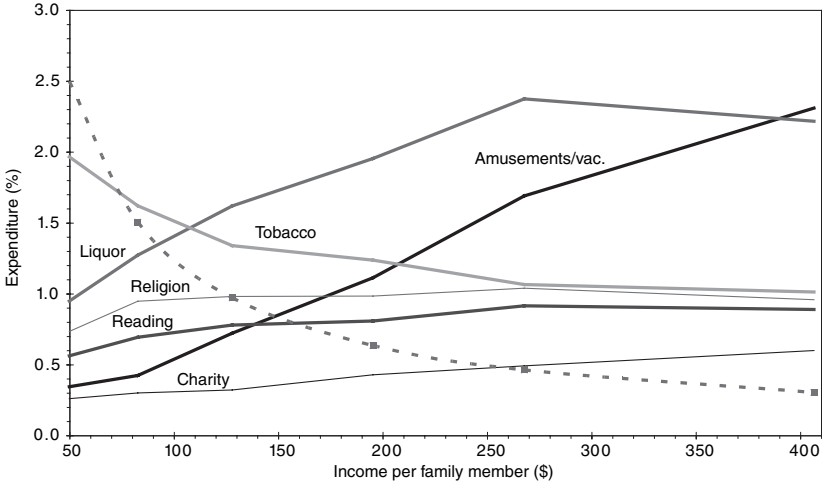

Figure 4.3 Leisure and related expenditure of US industrial families, per member, 1889–1890

Note: Income groups were made according to income per family member. The dotted line is the iso-expenditure line, which shows the slope the expenditure curves should roughly have to reflect a constant expenditure in absolute (dollar) terms. The start value of 2.5 percent for this line has been taken arbitrarily; what matters is the slope.

Source: Data US Commissioner of Labor Survey 1891, provided by Michael Haines.

regressions yields an average elasticity of 1.43.[8] The likelihood of households having positive expenditure on amusements shows that this was highly income dependent: as income rose from zero to $500, the probability of any expenditure on amusements doubled from 20% to 40% (figure 4.2), and as income tripled to $1500, the probability doubled again, to 80%.

Comparing all recreational items, it is clear that amusement expenditure rose the fastest with income, in a consistent manner (figure 4.3). Only liquor expenditure rose in a similar way, but only for increases across the lower incomes. The income elasticity of amusement expenditure was also far higher than that of other expenditures, and was higher than all other elasticities across all income intervals except the lowest

[8] (Biased) OLS income elasticity for the whole sample (including households with zero expenditure on amusements) was 2.14. See Bakker (2007a).

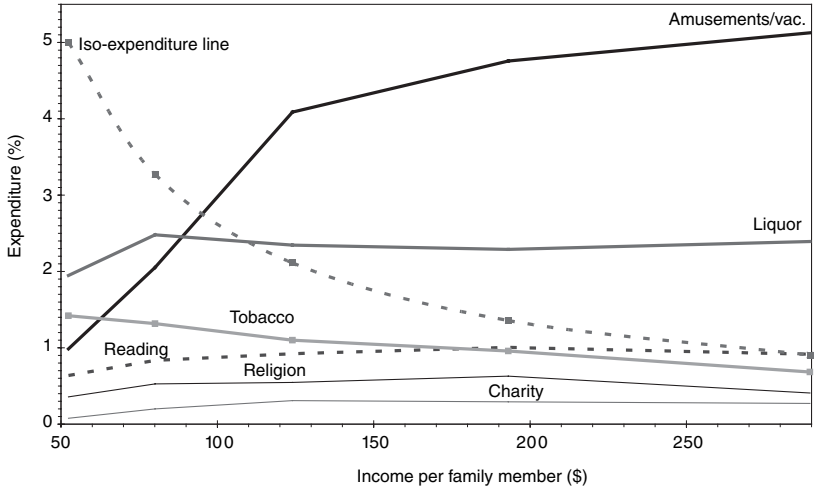

Figure 4.4 Leisure and related expenditure of British industrial families as a percentage of income, 1889–1890
Note: Income groups were made according to income per family member.
Source: Data US Commissioner of Labor Survey 1891, provided by Michael Haines.

one, from $200 to $450, where tobacco and religion were higher and that of reading was equal.[9]

Britain

In Britain, the average household income was $532, about £109, which was substantially above the average earnings of general labourers (£63) and those of skilled labourers (which ranged from £88 to £94).[10] A large part of the difference was probably due to the fact that household income often aggregated the income of several family members. The percentage of income spent on amusements was relatively large, about 3.5 per cent, and was far larger than expenditure on the other recreational items (figure 4.4). The rise of amusement expenditure with income shows a distinctive pattern; until slightly above the average income, expenditure rose sharply, and after that it increased more gradually and far more slowly (in percentage terms) than income: as income doubled to two times the average, amusement expenditure increased by under a third. The

[9] See Bakker (2001b: 87, 384).
[10] This leaves out skilled engineering labour, which earned £107 annually, on average (Williamson 1982, as quoted in Mitchell 1988: 153).

estimated income elasticity was 1.80 assuming constant elasticity and 1.68 assuming changing elasticity.[11] The likelihood of having positive amusement expenditure increased rapidly with income: as income moved to $350, the probability of any expenditure on amusements doubled from 30% to 60%, and as income tripled to $1000, the probability increased by half to 90%.

None of the other expenditure items showed a similar pattern as amusement expenditure, with a break at average income. At low incomes, amusement expenditure was comparable with other recreational expenditures, but as incomes rose it became up to an order of magnitude more important than other expenditures (figure 4.4). This suggests that amusements and vacations were a strong luxury. Its overall income elasticity was far higher than that of all other recreational items.[12] Looking at disaggregated income intervals, only across the lowest interval was the elasticity of charity and religion higher; across all other intervals the elasticity of amusements dominated.[13]

An opportunity to compare the British 1889/90 data with other research is provided by a survey of twenty-eight 'industrial families' carried out by the Economic Club between 1891 and 1894. The representativeness of the sample cannot be established, and the survey only recorded expenditure, not income. Nevertheless, it can give some rough indications of relative expenditures. Average annual expenditure for the twenty-eight families was £92.16, or $449, considerably below the 1889/90 survey average income of $532 but closer to the national average non-farm wage (table 4.2). On average, these households spent 1.62 per cent of their income on 'recreation', and 2.41 on 'recreation' and 'travelling', which is more comparable to 'amusements and vacations' in the 1889/90 survey. This suggests that in that survey, the larger part of 'amusements and vacations' may have been spent on amusements. The expenditure in 1891–94 was about a third lower than the 3.5 per cent reported in the previous survey.

As in the previous survey, recreation and travelling expenditures were higher than any other leisure item, and recreation expenditure itself was lower only than expenditure on alcohol. Expenditure on liquor and tobacco was substantially lower for the twenty-eight families, probably because of under-reporting. Religion and charity expenditure was considerably higher than in the 1890 group. Besides the issues of representativeness and comparability, an explanation for this difference may

[11] Whole-sample (biased) OLS income elasticity (including households with zero expenditure on amusements) was 2.16. (Bakker 2007a).
[12] Bakker (2001b: 102). [13] *Ibid.*: 391.

Table 4.2 *Annual leisure and related expenditure of 28 British industrial families, per member, 1891–1894*

	Per expenditure group (£)				All families combined	
	−8.67	8.67–15.17	15.17–21.67	21.67−	2.82–73.02	2.82–73.02
Expenditure/ member (£)	4.97	12.81	18.20	41.17	18.07	
No. of families	7	9	6	6	28	
Average family size	6.29	4.72	4.83	4.61	5.10	
	Expenditure (%)					% reporting
Recreation	3.63	0.33	0.66	2.37	1.62	54
Travelling		0.08	0.16	1.51	0.79	21
Alcoholic drinks	0.02	1.00	4.85	1.33	1.92	43
Tobacco	0.84	0.50	0.20	0.24	0.33	29
Religious observances		0.23	1.38	1.71	1.19	25
Charity and gifts		0.17	0.36	0.88	0.55	43

Note: expenditure/member refers to average expenditure per family member; % reporting is the share of families that reported any expenditure on the item.
Source: Economic Club (1896).

be that the Economic Club, which was an organisation of progressive persons, might have selected the more 'progressive' working-class families, which played a role in the temperance movement and would give away more than the average family.[14]

The expenditure on recreation and travelling rose sharply with income, in line with the findings of the earlier survey and confirming that recreation and travelling were strong luxuries. Their income elasticity (1.6) was substantially above one, and lower than the OLS elasticity estimate for the 1889/90 survey (2.2), though not far from the OLS elasticity for cases with positive expenditure (1.7) and the log-log constant elasticity estimate (1.8). Disaggregated elasticity for the two items was also greater than one (1.3 for recreation and 2.3 for travelling), and suggests that, for the 1889/90 survey, the elasticity for 'amusements' expenditure without 'vacations' was substantially lower than the aggregate. The percentage of families with positive expenditure on 'recreation' and 'travelling' was possibly somewhat lower, 54% and 21%, versus 71% for the 1889/90 survey. A logit model predicts a value of 68% for an

[14] This thought is owed to Paul Johnson.

income of $449, suggesting that not all of the difference could be explained by the lower average income in the 1891–94 sample (figure 4.2). Overall, the Economic Club survey suggests that the 1889/90 findings are not implausible.[15]

France

In France, the average household income was $409, or about 2,045 francs, which was substantially above the national average for non-farm workers. The average expenditure on amusements and recreation was nearly 4 per cent of income. The rise of expenditure with income showed a discontinuity just below one-and-a-half times average income. Before, amusement expenditure was rising rapidly, after declining somewhat (as percentage of income, not in absolute terms), and then increasing more gradually.[16] The income elasticity was equal to or greater than one, with a constant elasticity estimate yielding 1.07 and a changing elasticity estimate yielding 1.26.[17]

French expenditure on amusements was substantially larger than all other recreational expenditure, except for liquor, on which over 5 per cent of income was spent, on average (figure 4.5). The overall income elasticities of religion and charity were substantially higher than amusements.[18] Looking at the disaggregated income intervals, only over the highest income interval did the elasticity of amusements dominate all other elasticities.[19] This suggests that amusements in France were a luxury, but became far more luxurious for the highest income groups.

Comparing the countries

It is clear that, at exchange rates, the income of the US sample was about 30 per cent higher than that of the British one, which in turn was 30 per cent higher than the French one. Average expenditure on amusements and vacations as a percentage of income was more than three times higher in Britain and France. The higher expenditure in France compared to Britain appears to be mainly caused by a far higher likelihood of

[15] According to Feinstein's (1991: 158) rough estimate, based on the Prest (1954) data, in 1900 entertainment and betting accounted for 0.95 per cent of working-class expenditure and 3.07 per cent of middle- and upper-class expenditure, with an average of 1.97 per cent.

[16] This could be due to the small French sample size of 263 households, versus 1,024 for Britain and 6,809 for the US. See Bakker (2007a).

[17] Whole-sample (biased) OLS income elasticity was 1.41 (Bakker 2007a).

[18] See Bakker (2001b: 113). [19] *Ibid.*: 394.

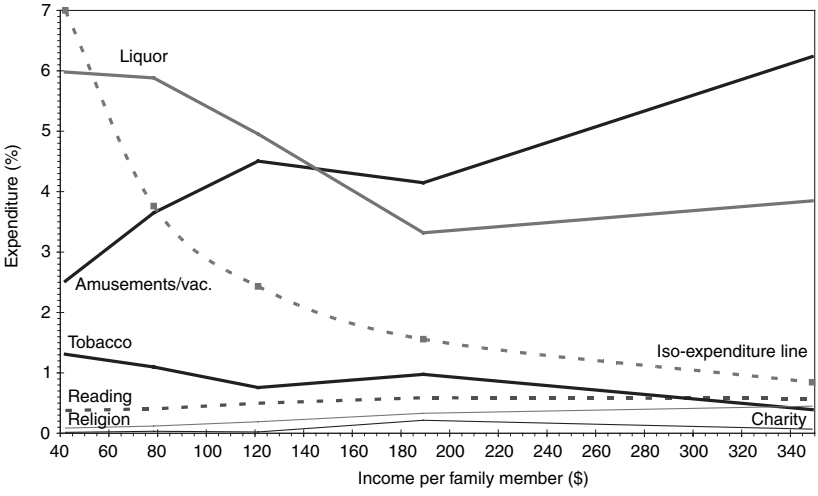

Figure 4.5 Leisure and related expenditure of French industrial families, 1889–1890

Note: Income groups were made according to income per family member. For a detailed overview of the groups and the sample, see Bakker (2001b: 393).
Source: Data US Commissioner of Labor Survey 1891, provided by Michael Haines.

positive expenditure for French lower income groups (see figure 4.2), with the likelihoods converging quite rapidly as incomes rose. In all three countries expenditure on amusements and recreation was far higher than that on reading, religion and charity individually, and for Britain and France it was far higher than the combined expenditure on the latter three items. The expenditure patterns on liquor and tobacco differed substantially from country to country.

The expenditure on amusements and vacations relative to income showed sharp differences. In the US, expenditure rose relatively smoothly with income, while in both Britain and France it exhibited important discontinuities (figure 4.1). In Britain, expenditure increased sharply until about 1.2 times average income, and then rose ever more slowly. In France, the expenditure grew until about one and a half times average income, and then showed a mixed pattern. This discontinuity may have been caused by the smaller European sample sizes. It is also possible that, at the high European expenditure levels, the US would have seen a similar pattern, in which at some point, when a large amount on amusements and vacations had been spent, the marginal utility of further expenditure decreased sharply as income increased. It will be shown below that while US expenditure patterns on amusements did exhibit

the same smooth increase in 1917–19 (when expenditure was higher), they started showing discontinuities in 1936–38 (when expenditure was higher again).

Income elasticity was the highest in Britain and the lowest in France, both for assuming constant and varying elasticity. US elasticity was substantially closer to the French than to the British one. The likelihood of positive expenditure, however, showed sharp differences. At low incomes, British households were about one and a half times more likely to spend on amusements and vacations than their US counterparts, and French households were two to three times more likely to spend on entertainment. In Britain, expenditure was the most income-dependent (until about 1.8 times average income), in France it was the least.

A potential explanation could be differences in the spread of working hours across income groups. Although hours worked in the US do not appear to have been much different from Britain or France,[20] it is possible that those in the lowest US income groups worked far longer hours. Even if that was the case, it remains uncertain whether it was an effect of a choice to spend less on amusements and vacations, or the cause of the low expenditure. Another reason may have been that the price of spectator entertainment in the US in the late nineteenth century probably was significantly higher than in Britain and France.[21] This could have been a result of the relative scarcity of skilled (entertainment) labour in the US.

Whatever the differences between them, in all three countries expenditure on amusements and vacations rose far more sharply with income than expenditure on other items. In the US and Britain the income elasticity of amusements was far higher than that of all other items, in France religion and charity showed a higher elasticity, but were a far lower percentage of income than in the US and Britain. The expenditure pattern on liquor varied substantially between countries. In Britain, it rose sharply until a certain point, after which it levelled off, in the US it remained more or less stable, and in France, it declined with income (but from a very high income share). In Britain liquor was a luxury, while in the US and France it was more of a normal good.

The structure of demand during the emergence of cinema

The above section looked at income elasticity at the cross-section level. The unavailability of reliable data makes it impossible to compare this

[20] See table 3.1 in Chapter 3. [21] Bakker (2004a).

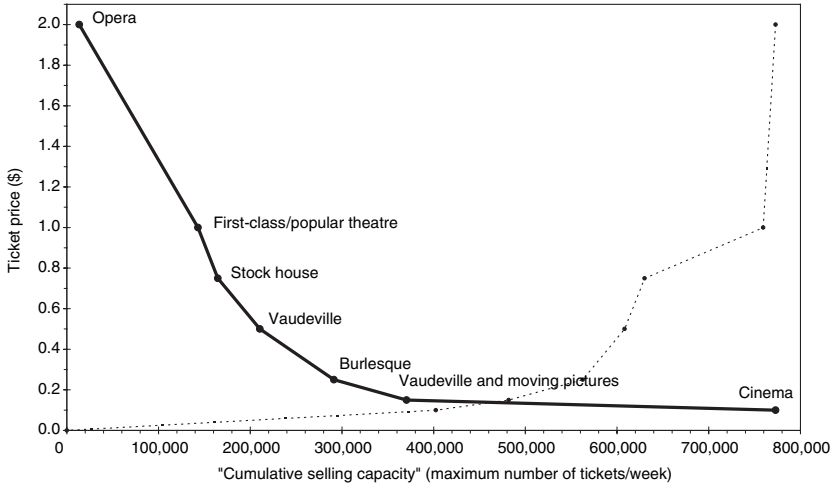

Figure 4.6 Ticket price versus cumulative ticket-selling capacity for entertainment venues in Boston in 1909 ($ and number of tickets)
Note: The bold line is the approximated 'demand curve'.
Sources: Table 4.3; compiled from Boston Committee 1909, as reported in Jowett (1974).

with the price elasticity of entertainment demand. Particularly good price and capacity data for Boston in 1909, however, enables the making of a rough-and-ready estimate of the price elasticity of demand for various forms of spectator entertainment and their market shares.[22] A committee in Boston estimated the 'selling capacity' of each category of spectator entertainment, which appears to have been the maximum number of tickets the combined venues in a particular category could sell within normal showing hours (see figure 4.6).[23] As cinemas could have far more showings during one day than, for example, opera, the larger capacity of cinema does not necessarily reflect a proportionately larger number of seats or venues.

Two issues affect the conclusions we can draw from these data. First, in 1909, cinemas had been around for two to three years and their number was still growing fast. The data thus enable no more than a snapshot of a situation that was changing rapidly. Second, Boston was a large metropolitan US city, and the findings for Boston may only have a degree of representativeness for other metropolitan areas in the US. In

[22] The data is reported in Jowett (1974).
[23] Music and concert halls were excluded, apparently.

smaller cities, towns and villages, the amount and variety of entertainment supplied was possibly more limited.

From the price and selling-capacity data the potential weekly revenue can be calculated. This is a maximum revenue, assuming that all seats are filled at all show times. The total weekly sales capacity of Boston spectator entertainment venues was $268,070. The real weekly revenues in 1909 were probably substantially lower. These figures cannot easily be transformed into annual figures, because all venues were not open all weeks of the year. Cinema was probably the only venue that was open fifty-two weeks. If we optimistically assume that opera was operating thirty weeks a year, and the other live entertainment venues forty weeks a year, we arrive at an annual potential revenue of about $10.5 million. If we then assume that 2/3 of tickets would be sold, on average, we would arrive at annual sales of $7 million, about 4 per cent of total US expenditure on spectator entertainment in 1909.[24] In broad terms, although on the high side, this figure does not seem improbable, given that live entertainment expenditure was heavily concentrated in big cities.

Given the assumptions that have to be made to arrive at annual figures, below we will focus on the weekly data as reported in the source. This is also more relevant if we want to get insight into consumer expenditure. During about forty weeks of the year consumers faced all these choices, prices and qualities at the same time, and those are the weeks that matter if we want to compare various forms of entertainment. Using the capacities cumulatively, one can approximate a 'demand' curve, assuming that weekly capacities reflected tickets sold in roughly the same way for each product category (the bold line in figure 4.6). Likewise the elasticity of demand and the potential consumer surplus generated by each form of entertainment can be estimated (table 4.3).

If we look at live entertainment only, first-class theatres sold the most tickets, followed by burlesque and then vaudeville. This suggests that, although burlesque has been less examined in the academic literature, it was an important form of entertainment for American consumers, probably more significant than vaudeville. In revenue terms, first-class theatres had by far the largest market share, followed at a distance by opera and then vaudeville and burlesque.

The demand curve (figure 4.6) makes it possible to estimate the consumer surplus of each form of entertainment, the difference between what consumers in the aggregate were prepared to pay and what they actually had to pay. If we assume that the demand curve between two

[24] For national expenditure, see Chapter 3.

Table 4.3 *Prices, capacity, sales potential, price elasticity and consumer surplus for various types of spectator entertainment venues, Boston, 1909*

	Price	Capacity	Sales	Percentage of		sales/	% of all live ent.		Price elasticity of demand			Consumer surplus (CS)			CS/	CS+	% of
	$	seats	$	Capacity	Sales	cap	Capacity	Sales	Arc	Informal	Log-log	$	%	average	Rev. %	Rev. $	total
Opera	2.00	13,590	27,180	2	10	5.8	4	12	−2.41	−3.86	−0.30	19,230	17	1.42	71	46,410	12
First-class theatres	1.00	111,568	111,568	14	42	2.9	34	50	−2.41	−1.45	−0.30	55,784	48	0.50	50	167,352	44
Popular theatres	1.00	17,811	17,811	2	7	2.9	5	8	−0.96			8,906	8	0.50	50	26,717	7
Stock houses	0.75	21,756	16,317	3	6	2.2	7	7		−1.08	−1.42	2,720	2	0.13	17	19,037	5
Vaudeville houses	0.50	45,744	22,872	6	9	1.4	14	10	−0.61	−0.82	−1.42	5,718	5	0.13	25	28,590	7
Burlesque houses	0.25	80,700	20,175	10	8	0.7	24	9	−0.48	−0.96	−1.42	10,088	9	0.13	50	30,263	8
Vaudeville and moving pictures	0.15	79,362	11,904	10	4	0.4	12	3	−0.48	−0.99	−1.42	3,968	3	0.05	33	15,872	4
Moving-picture theatres	0.10	402,428	40,243	52	15	0.3			−1.76	−1.23	−1.42	10,061	9	0.03	25	50,304	13
Total	0.35	772,959	268,070	100	100	2.072			−1.07	−0.53	−0.78	116,473	100	0.15	43	384,543	100
All live entertainment	0.67	330,850	221,875	43	83	1.9	100	100	−1.17			104,428	90			326,304	85
Motion picture entertainment	0.10	442,109	46,195	57	17	0.3			−1.76			12,045	10			58,240	15

Notes: Capacity = the weekly seating capacity as estimated by the Boston committee (venue capacity times number of performances).
Sales = sales potential, when all seats are sold at the listed prices.
Arc elasticity = between respective price and the next price down.
Informal elasticity = based on best tangents to demand curve at data point, using mixed log-lin, polynomial and power curves at various stretches of the demand curve.
Log-log elasticity = based on constant elasticity log-log model split for two parts of demand curve to get best fit (R2 = 0.998 and 0.945).
CS = Consumer surplus = area above price line and under hypothetical demand curve for the respective stretch of the curve. For opera, the intercept at q=0 is set at $4.83, the price that equalises arc elasticity for opera.
Rev. = Revenue.
Source: calculated from data from Boston Committee 1909, as reported in Jowett (1974: 202).

points is uncompensated and straight, the surplus is simply the triangle formed by the price line, the demand curve and a vertical line from the first price above the category of which the consumer surplus is calculated.

If we look at the consumer surplus generated, opera and first-class theatre together accounted for as much as 72% of total live consumer surplus, which suggests a far greater economic importance in these terms.[25] If consumer surplus and revenue are added, which may be the least imperfect proxy of economic impact, the share of opera and first-class theatre was still 66%. If all theatre is included, the figures increase to 83% and 80% respectively.

For spectator entertainment as a whole, it is clear that motion pictures had by far the largest market share in terms of quantity. They accounted for 57% of all capacity, followed by first-class theatre with only 14% and burlesque with 10%. In terms of revenue, however, their market share was far smaller, only 15%. Motion pictures also accounted for only 10% of total consumer surplus, far less than opera and its economic impact (revenue and consumer surplus) was about 15%.[26] First-class theatre held the largest revenue share, with 41%, and opera, which accounted for just 2% of ticket-selling capacity, reached revenues that were two-thirds the size of cinema revenues. Unfortunately, data on profitability are lacking, and these may have shown a different picture.

The forms of entertainment are ranked in order of price (table 4.3), and this order more or less coincides with the time when the product category was introduced. This suggests a certain law of diminishing returns. Once the high-priced entertainment had been introduced, entrepreneurs tried to capture unserved parts of the market with lower-priced, slightly differentiated entertainment. Ex-post, once a new product category had been introduced, existing categories might have differentiated their quality further and might have tried to keep up or even increase the price difference with the new product category in a process of dynamic product differentiation, thus operating a system that could be characterised as price discrimination.[27]

A central question is why dynamic product differentiation did not all happen at the same time, how it could be that only over time, one after

[25] The estimated opera consumer surplus is highly sensitive to the educated guess of the cut-off price (at $q = 0$). The arc elasticity of demand was assumed to be the same between cut-off price and opera price as between opera and first-class theatre prices, yielding a cut-off price of $4.83 for weekly and $4.71 for annualised data. A different value would change opera's consumer surplus significantly.

[26] Half of 'vaudeville and motion pictures' have been included to arrive at these figures.

[27] See Chapter 2.

the other, lower-priced forms of entertainment emerged. One hypothesis is that the changes in the nature and size of consumer demand discussed in the preceding chapter increased the demand for lower-priced entertainment and made entry profitable. Population growth, rising real wages and falling working hours all increased demand, while urbanisation and growing transport networks concentrated the demand spatially. On the supply side a series of technological and organisational innovations reduced costs, increased quality and made capital available more readily.[28] Together these factors probably constituted the process that both enabled and limited the speed with which dynamic product differentiation could take place.

The average price for live entertainment was only 67 cents, but the range was wide, from 15 cents for low-class vaudeville (and films) to more than thirteen times as much for an opera ticket.[29] Reasons for different prices could have been the intensity of competition, which would also partly depend on the geographic dispersion of venues in a category; differentiated products serving different markets; differences in quality; price discrimination; and relative scarcity of the product. It is likely that the differences were caused by a combination of these factors.

The hypothetical demand curve, based on selling capacity and prices, is steep at high prices and very flat at low prices. First-class theatres faced substantially more demand than opera, but the lower-priced forms of entertainment attracted smaller additional audiences. Only with cinema, at the lowest end of the price range, did demand suddenly more than double. If the curves in figure 4.6 were actual supply and demand curves, the competitive price (without price discrimination) would have been about 17 cents, which is about half the average price under actual (non-perfect) price discrimination.

A rough-and-ready indication of the changes in the price elasticity of demand can be obtained by plotting the price and capacity data in logs. This reveals a high elasticity from $2.00 to $1.00 (from opera to first-class theatres) and from $0.15 to $0.10 (from low-class vaudeville to cinema). The interval between $1.00 and $0.15 had a far lower price elasticity.

This pattern is confirmed by a ballpark estimation of the price elasticities. This has been done in three ways: by calculating arc elasticities; by informally fitting a curve for each pair of adjacent points, and by estimating log-log constant elasticity functions (table 4.3). The arc elasticity shows the extremely high price elasticity of opera, highly inelastic

[28] See Chapter 3 and Chapter 2.

[29] The difference between a ticket for the Metropolitan Opera and the cinema in New York does appear to be within the same ballpark today, coincidentally.

demand for all intermediate forms, and strongly elastic demand for cinema, below a price of 15 cents. Using the second approach yields a familiar decrease in elasticity as we go down the demand curve: each further price decrease will result in a lower increase in quantity sold. But when the price falls below 50 cents the price for vaudeville shows, elasticity increases again and demand becomes elastic when the ticket price of cinema is reached. This suggests that there was a great potential for technologies or product categories that could deliver entertainment at low prices, as demand responded heavily to it. It is possible that large groups of consumers, who otherwise could not afford spectator entertainment, would enter the market at these prices. Increasing urbanisation probably concentrated these consumers enough spatially to make such lower-priced venues feasible over time. This also could explain how every new product category was lower priced. A rough indication of supply (figure 4.6) shows that the price increase from $1.00 to $2.00 yielded limited additional demand, and that therefore providing entertainment at prices and qualities far above opera might not be feasible. The log-log estimations broadly confirm this pattern, with a few differences. The data points break into two distinct groups that each fit a log-log function quite well.[30] This suggests inelastic demand for the higher prices and increasingly elastic demand for the lower prices.

The shape of the demand curve, with high price elasticity at high prices and low elasticity at very low prices, and rather moderate elasticity in between may to some extent explain the time lags in dynamic product differentiation. Entrepreneurs had to find out, by a process of discovery, what the demand was for new innovative forms of entertainment. The low elasticity in the middle part of the demand curve may have slowed down attempts to provide far lower priced forms of entertainment, as many entrepreneurs might have guessed that demand would not increase enough to make it worthwhile. Thus it may have taken a long time, many historical accidents and innovations such as cinema before entrepreneurs 'discovered' the responsiveness of demand at low prices. This process would not be dissimilar to the argument of proponents of 'path dependency' that more efficient paths may not be taken because the first few steps seem unattractive and hide the large pay-offs later on. At some point in time, the supply-side process would meet the demand-side process that was driven by the factors mentioned above and was probably increasing elasticity at low prices. Time-series of price elasticity, which are unfortunately lacking, would enable the

[30] $R2 = 0.997$ and 0.945, respectively, vs. 0.78 for the entire data-set log-log.

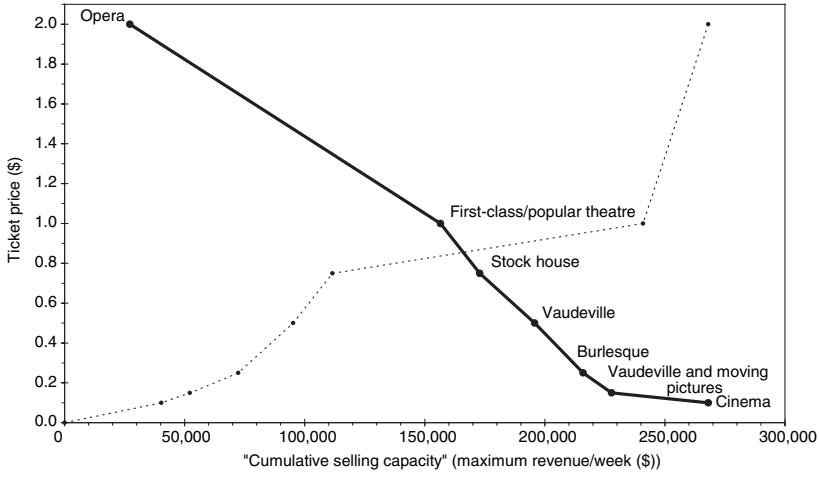

Figure 4.7 Ticket price versus cumulative selling capacity for entertainment venues in Boston in 1909 (dollars and dollars or utils)
Note: It has been speculatively assumed one dollar equals one util (see text).
Sources: Table 4.3; Boston Committee 1909; Jowett 1974.

detailed investigation of the interplay between this entrepreneurial discovery process, cost-decreasing technological innovations, and changes in the size and geographic density of demand.[31]

One could argue that the various forms of entertainment were of a different quality, both horizontally (different products) and vertically (better or worse products). These quality differences are not easy to measure. If we assume all forms of entertainment are part of the same market one could argue that price differences reflect quality differences and assume that one dollar equals one util,[32] so that the revenue-generating capacity is an indicator of quality-adjusted quantity. This method, though questionable, results in a demand curve that is less steep and flat at its respective ends (figure 4.7).

The estimates above are based on weekly calculations. If we multiply the weekly quantities by the estimated number of weeks each category was in operation during the year mentioned above, the findings do not change significantly. The share of cinema in quantity increases from 57% to 63.5%, in revenue from 17% to 23%, in consumer surplus from

[31] On entrepreneurial discovery see Kirzner (1985, 1973).
[32] For opera, monopoly pricing probably played a role. Other forms sometimes held neighbourhood monopolies, especially if outside the theatre district.

10.5% to 14.5% and in 'economic impact' from 15% to 20.5%. The arc price elasticity of cinema decreases from 2.1 to 1.8, with all other elasticities not changing significantly.

The findings of the Boston Committee suggest that live entertainment since the second half of the nineteenth century had been developed by ever newer forms appearing at the margins in addition to the existing opera and theatre. Through dynamic product differentiation these forms would partially capture some of the market for pre-existing forms and partially open up a new, under-served market. These data also suggest that cinema initially appeared as such an innovation at the margins. In its early years, it was large in terms of tickets sold, but relatively small in terms of revenue, and at first did not seem a serious competitor to high-value-added entertainment. In subsequent years, however, as the next chapters will show, the price of cinema tickets as well as its quality gradually increased and captured an ever larger share of the market of pre-existing forms of entertainment, eventually driving some of them to near-extinction.[33]

Household expenditure after cinema

Fixed cinemas appeared from about 1905 onwards and grew sharply in number during the 1910s. They changed entertainment consumption by offering lower prices and a far wider availability, both across space and across time. Cinemas emerged in neighbourhoods and small towns and offered shows even at the marginal hours of the day, the marginal days of the week and the marginal weeks of the year.

Falling ticket prices, wider availability, increased leisure time and easier access to entertainment venues through living in cities and transport networks all had a positive effect on the demand for entertainment. Rising real wages left consumers with more discretionary money, but also increased the opportunity cost of spectator entertainment. Entertainment and other recreations may actually have increased the value of leisure time, making it attractive for workers to strive for more of it. Paradoxically, while during the first industrial revolution workers preferred to work longer hours to pay for new goods (Voth, 2000), during the second one it appears that they chose to work shorter hours to consume new services.

[33] That motion pictures were aimed initially at a different market but increased in quality and eventually strongly competed with pre-existing entertainment may not be unlike the experience of 'disruptive innovations' identified by Christensen (1997).

Falling ticket prices meant that, although the quantity of spectator-hours consumed might have gone up substantially, the expenditure share remained limited. The longitudinal fall in ticket prices may have changed the shape of expenditure relative to income at the cross-sections for our benchmark years.

US

A US Department of Labor study surveyed 2,096 'white' families in 92 cities or localities in 42 states between 1917 and 1919. It aimed 'to get representative data that would show living conditions in all sections of the country and in all kinds of localities'.[34] The average household income of respondents was $1,514, 32 per cent higher than that of the 1890 survey, in real terms. The national average income per worker was about $1,224,[35] 15 per cent higher than in 1890.[36]

Households spent 1.2 per cent of income on 'amusements, vacations, etc.', of which 0.49 per cent on movies, 0.06 per cent on live entertainment and 0.45 per cent on vacations (table 4.4). The average expenditure per household member on spectator entertainment was at most $1.95, substantially below the national average of $2.84.[37]

As a whole, amusements and vacations expenditure was barely higher than twenty years earlier (when it was 1.1 per cent) and one can only speculate on how the share of spectator entertainment changed, given the changing aggregate share and substitution of films for live entertainment. The expenditure share of reading was also similar to that in 1890. Expenditure shares of liquor, tobacco, religion and charity had all dropped significantly compared to thirty years earlier. Since religion and charity had no price, the lower shares may point to a low long-run income elasticity for these items. Liquor consumption dropped by over two-thirds, tobacco consumption by just over 10 per cent, although the latter's decline was probably brought to a halt by the rising popularity of the cigarette during the 1910s.

The expenditure patterns of spectator entertainment relative to income reveals an income elasticity of 2.5, substantially lower than in 1890. Elasticities for movies and live entertainment were 2.3 and 4.4, respectively (Bakker 2007a). Entertainment consumption increased relatively smoothly with income, with no sharp discontinuities as

[34] US Bureau of Labor Statistics (1924). [35] See table 3.1 in Chapter 3.
[36] The average income of 1890, $684, is equivalent to $1,143 in 1918 dollars.
[37] National average calculated from 1914 and 1919 expenditure, by geometric interpolation of real expenditure, which is then translated back into nominal expenditure.

Table 4.4 *Leisure and related expenditure of US families, 1917–1919*

Item	1917–1919 survey Expenditure (%)	1889–1890 survey Expenditure (%)
Contributions, dues, gifts		
Church	0.66	0.97
Labor organisations	0.30	
Lodges, clubs, societies, etc.	0.22	
Charity	0.08	0.40
Patriotic purposes	0.50	
Gifts	0.48	
Total	2.24	
Street-car fares		
To work	1.17	
To school	0.04	
Other	0.36	
Total	1.57	
Travel		
Total	0.13	
Amusements, vacations, etc.		
Movies	0.49	
Plays, concerts, etc.	0.06	
Other amusements	0.08	
Excursions	0.07	
Vacations	0.45	
Total	1.16	1.10
Education and uplift		
Newspapers	0.53	
Magazines	0.11	
Books	0.06	
Schools, tuition, books, etc.	0.29	
Music	0.16	
Total	1.15	0.80
Legal drugs		
Liquor	0.49	1.80
Tobacco	1.12	1.30
Total	1.61	3.10

Note: 1917–1919: average of 12,096 families, based on income per family member. Average income in 1917–1919 was $309, the interval over which elasticity is calculated is $189/$436. 1889–1890: average of 6,809 families, based in income per family member. Average income in 1889–1890 was $145, the interval over which elasticity is calculated is $50/$406.

Source: United States Bureau of Labor Statistics (1924: 1–5; 447–53).

observed for Britain and France in 1890. As real incomes rose longitudinally, entertainment income elasticity at the cross-section may have fallen. If expenditure increased linearly with income, a big if, then in the long run, income elasticity would go down and approach one.[38] Entertainment income elasticity was substantially higher than that for liquor, tobacco and religion, but lower than that for charity.

A probably unrepresentative survey of single women in Washington state in 1913 suggests that entertainment expenditure varied substantially between states, and between married and unmarried consumers. The women spent between $460 and $570 per annum ($700 to $870 in 1918 dollars), substantially below the national average. Amusement expenditure was between 1.3 and 2.5 per cent of this, vacation expenditure between 2 and 3 per cent. Those working in hotels and restaurants spent the least on amusements (1.3 per cent). For laundry workers, mercantile occupations, office personnel, factory workers and telephone and telegraph personnel average expenditure ranged between 1.6 and 2.6 per cent. Vacation expenditures were even higher and varied from 2.0 to 3.1 per cent. On average, the women spent 2.0 per cent on amusements and 2.4 per cent on vacations.[39]

Between 1934 and 1936 the Department of Labor surveyed 14,469 'white and negro' families from 42 cities with over 50,000 inhabitants. Families included had an annual income of at least $500, received no relief and had at least one person employed for thirty-six weeks earning at least $300. No clerical workers earning over $200 a month or $2,000 a year were included. Within these boundaries, the researchers tried to obtain a random sample.[40] The average household income was $1,511, 10 per cent higher in real terms than that in 1918. National average income per worker was $1,161, about 5 per cent higher than in 1918.

The average expenditure on spectator entertainment was 1.1 per cent, more than double that in 1918. Over 1 per cent was on movies, again more than double the 1918 share. Expenditure per household member was $5.14, compared to national per capita expenditure of $4.72. Live entertainment expenditure was 0.03 per cent, half the 1918 value, or $0.14 per member (compared to a national average of $0.35). The talkies probably had increased motion picture expenditure and decreased live expenditure. Tobacco expenditure was up substantially,

[38] $$\lim_{Y \to \infty} \varepsilon_y = \frac{1}{\frac{a}{bY} + 1}$$

With Y = income, and the line a + bY the estimated expenditure line.

[39] Taylor (1915). [40] Williams and Hanson (1941).

possibly driven by the prohibition of alcohol, while reading expenditure was also up (table 4.5).

The income elasticity of motion pictures was 1.5, substantially lower than previously, while that of live entertainment had nearly doubled to 8.2. The increase of expenditure with income was less smooth than before, with substantial fluctuations at above-average incomes (figures 4.8, 4.9 and 4.10). Compared to Europe, film expenditure increased more sharply with income, suggesting that motion pictures were more of a luxury in America than in Europe.

Britain

In Britain, in 1937 and 1939 two budget studies surveyed 3,580 households.[41] The average household expenditure was £323, substantially higher than the average wage. The difference may be explained by the large number of middle-class households in the sample. The average real expenditure was 178 per cent higher than in the 1890 survey.

Outlays on the items that would constitute 'amusements and recreations' were substantially lower than in 1890, 2.6 per cent versus 3.5 per cent. Average expenditure on spectator entertainment was 1.3 per cent of all expenditure, slightly higher than in the US (table 4.6). Expenditure per household member was £1.15 (£0.73 for cinema and £0.42 for live), compared to national per capita expenditure of £1.37 (£0.87 and £0.50, respectively).[42]

The pattern of spending relative to income showed a rise in the expenditure share until the average income was reached, and then a gradual decline (figure 4.11). Both cinema and live entertainment showed a similar pattern, the peak of cinema expenditure at 60 per cent of average income, and that of live at 2.2 times average income. This suggests that live entertainment was strongly luxurious and cinema less so. The demand for cinema was strongly inelastic (0.49), and demand for live entertainment was moderately elastic (1.22). The role of class in Britain, by exphasising the social status of going to the theatre, may have made entertainment expenditure less income-sensitive than in the US.

All expenditure curves taken together showed the opposite picture of the 1890 survey, which showed sharply increasing relative expenditure

[41] For a general discussion see Massey (1942); Nicholson (1949). The author thanks Michael Anderson for locating the detailed survey in Prais and Houthakker (1955: appendix), which is used in table 4.6 and figure 4.11. Miskell (2006a) also uses this data to compare cinema-going in Wales and Britain.

[42] National data from Prest (1954) and Stone (1966); see Chapter 3.

Table 4.5 *Leisure and related expenditure of US families, 1934–1936*

Item	1934–1936 survey Expenditure (%)	1917–1919 survey Expenditure (%)	1889–1890 survey Expenditure (%)
	Commercial entertainment		
Movies (adult admission)	0.96	0.49	
Movies (child admission)	0.14		
Plays and concerts	0.03	0.06	
Spectator sports	0.09		
Total	1.22	0.63	(1.10)
	Reading		
Newspapers, street	0.31		
Newspapers, home delivery	0.53		
Magazines	0.14		
Books purchased (except school)	0.02		
Books borrowed from libraries	0.02		
Total	1.01	0.70	0.80
	Recreation equipment		
Musical instruments	0.07		
Sheet music, records	0.01	0.16	
Radio purchase	0.32		
Radio upkeep	0.07		
Cameras, films, photogr. equipm.	0.04		
Athletic equipment, supplies	0.05		
Children's play equipment	0.10		
Pets (purchase and care)	0.13		
Total	0.79		
	Recreational associations		
	0.13	0.22	
	Entertaining in home		
	0.04		
	Entertaining out of home		
	0.06		
	Other recreation		
	0.25		
	Legal drugs		
Cigars	0.18		
Cigarettes	1.46		
Pipe tobacco	0.18		
Other tobacco	0.08		
Total	1.90	1.12	

Note: 1934–36: average of 14,469 families, based on income per family member.
Average income in 1934–36 was $455, the interval over which elasticity is calculated is $149/$1198.
Entertaining in home/out of home: this category excludes food and drink.
For information on 1889–1890 and 1917–1919 data see tables 4.1 and 4.4
Source: US Bureau of Labor Statistics (1941: 315–16).

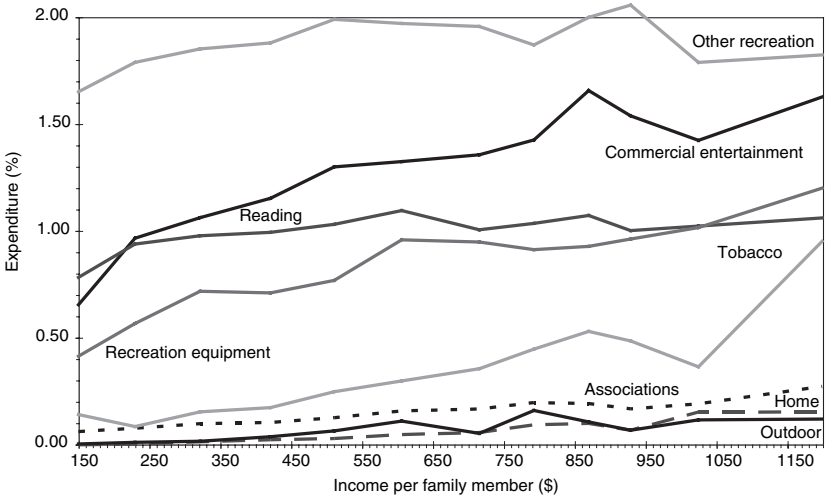

Figure 4.8 Leisure and related expenditure as a percentage of income of US families, by aggregate category, 1934–1936

Note: Income groups were made according to income per family member (Bakker 2001b: 389). Average income was $455.
Home = entertainment in the home; Outdoor = entertainment out of the home; Associations = membership of recreational associations.
Source: US Bureau of Labor Statistics (1941: 315–16).

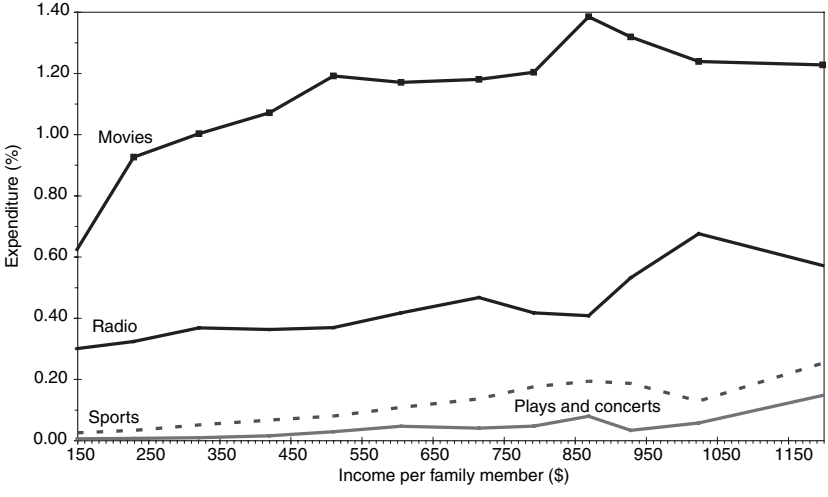

Figure 4.9 Expenditure on plays and concerts, spectator sports, movies and radio as a percentage of income of US families, 1934–1936

Note: See figure 4.8.
Sports = spectator sports; Radio = radio purchase and radio upkeep.
Source: see figure 4.8.

Table 4.6 *Leisure and related expenditure of British families, 1889–1890 and 1937–1939*

1889–1890 survey		1937–1939 survey	
Item	Expenditure (%)	Item	Expenditure (%)
		Cinema	0.81
		Other spectator entertainment	0.47
		Admissions sports/games	0.29
		Holiday expenditure	0.60
		Sports and games	0.45
Amusements/ vacations	3.47	Total	2.62
Reading	0.90		
Liquor	2.36		
Tobacco	1.13		
Religion	0.54		
Charity	0.26		
Religion and charity	0.80	Religion and charity	0.74
		Gambling	0.11
		Pet food	0.19

Source: US Commissioner of Labor Survey (1890); Houthakker and Prais (1955, appendix).

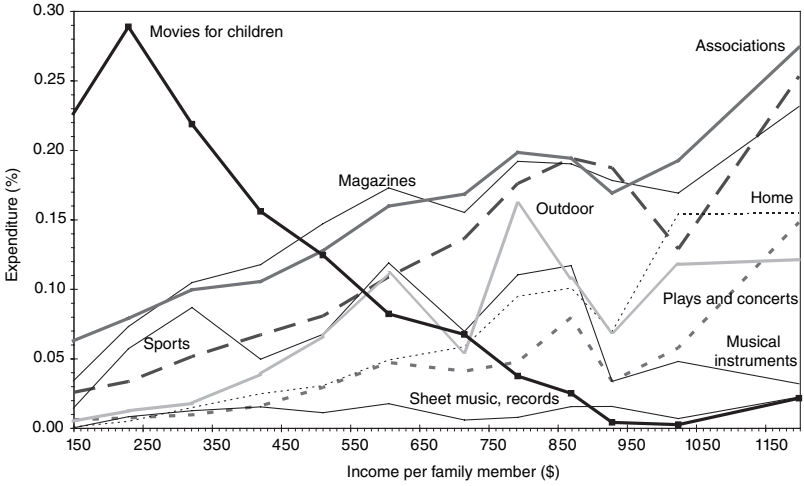

Figure 4.10 Expenditure on selected disaggregated leisure items as a percentage of income of US families, 1934–1936
Note: See figures 4.8 and 4.9. Average income was $455.
Source: see figure 4.8.

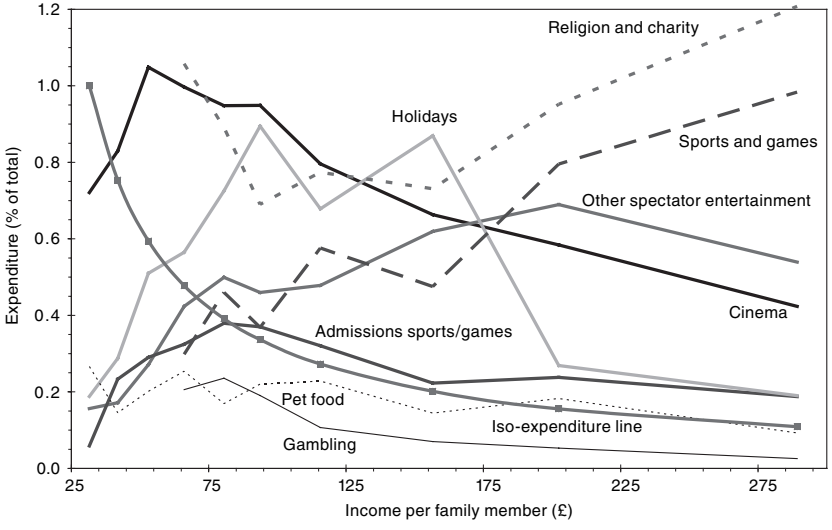

Figure 4.11 Annual leisure and related expenditure of British working- and middle-class families, 1937–1939

Note: Income groups were made according to income per family member (Bakker 2001b: 393). Average income was £90.

Source: Houthakker and Prais (1955: appendix).

as income rose. The 1930s survey showed an initial rise and then a consistent fall of relative expenditure, sometimes even changing into an absolute decline.

Several explanations for this are possible. The earlier survey may have made an error in recording expenditures. The curve's consistent rise suggests that such an error would probably have been a systematic one. That the first survey was specifically aimed at 'industrial families' suggests that it may also have only mapped the first few income brackets of the second survey, if the latter contained more affluent families. Yet a third explanation is that in the 1930s the disposable income at low incomes was substantially higher than in 1890, enabling these households to spend already significantly on entertainment. They therefore may have had less need to increase relative entertainment expenditure as income rose. This would not necessarily have to coincide with increasing income equality, although if the latter took place, the first would probably also. Between 1870 and 1960 Britain experienced a sharp decrease in income inequality, which may have affected entertainment consumption. The Gini-coefficient fell from 0.52 in 1867 (or between 0.47 and

0.59 in 1880), to 0.34 in 1962–63.[43] Likewise, the share of the top 20 per cent in total income decreased from 62% in 1867 and 58% in 1880, to about 50% in the 1930s, and 43% in 1963.[44]

At the same time, relative prices of several entertainment items probably decreased. Cinema, for example, reduced the average price of spectator entertainment, larger stadiums may have reduced average prices of sports matches, and package-tours and new seaside resorts, the price of holidays. If radio is considered a partial substitute for spectator entertainment, the price per spectator/listener-hour decreased even further. Radio became an important mass medium in the 1930s, offering consumers the maximum amount of spectator-hours (24 per day) at a fixed price (equipment costs and licence fee).[45]

Cinema was an income-inelastic good while live entertainment, sports matches and most other categories were elastic goods. This is a remarkable difference with the 1934–36 US survey, which showed an income elasticity of cinema expenditure of 1.49. However, both in the US and Britain the income elasticity of cinema was lower than that of other entertainment items.

Thus cinema was a luxury in the US and a normal good in Britain. In the former country, nearly all films shown were produced domestically, while in the latter most films were foreign-made. This affected consumer expenditure in two ways. First, then as now, across all countries, domestically made talkies attracted on average far more spectators than foreign-made talkies, if production costs were broadly similar.[46] In the US, therefore, films may have had a higher quality in the eyes of consumers. Second, in Britain the live entertainment industry had a competitive advantage over cinema because it offered domestically produced entertainment. British consumers consequently may have felt a far greater urge to supplement their cinema visits with live entertainment than their American counterparts.

Another explanation for the transatlantic difference might have been that films were linguistically less demanding than live entertainment. The immigrants in the US therefore might have had a stronger appetite for cinema. Further, British society was more stratified by class

[43] Kaelble and Thomas (1991: 26). A coefficient of zero or one means total equality or inequality, repectively.

[44] Williamson (1991: 58). In the US this share fell from 52% in 1935–36 to 48% in 1941, to a low of 44% in 1960, after which it increased.

[45] On radio, see Pocock (1988).

[46] See Chapter 6 on sunk costs and market structure. Most countries produced only a small share of the films released nationally. Export earnings were relatively limited, so smaller markets were at a disadvantage.

differences than the US melting pot. Consumers may have used live entertainment to show which class they wanted to belong to.[47] The British sample is probably also more unrepresentative than the US sample.

France

Little information on household expenditure is available for interwar France. A rare study surveyed 92 families in Toulouse between 1936 and 1938.[48] The sample's representativeness is unclear and the numbers seem too small to yield a robust outcome. The households all consisted of married couples and were divided into working-class 'ouvriers' and middle-class 'employees' and into four income groups, ranging from those with an annual family income below 1,200 francs to 'the rich' with an average income of 3,700 francs. The sample average was 1,705 francs. Because it is unclear how classes were defined, and also to obtain a larger sample, only income is examined.

The average expenditure on amusements was 5.8 per cent (table 4.7). Expenditure on cinema was highest, with 2.3 per cent, which was substantially above the 0.8 per cent in Britain, and over three times theatre expenditure. The income elasticities of the three broad expenditure categories – the intellectual, cultural and entertainment ('distractions') expenditure – were above one, suggesting that these included luxury goods and services. However, disaggregation shows that only theatre, cafés and sports were luxuries, while cinema was a normal good with relatively income-inelastic demand.

Comparing the countries

Income elasticity for live entertainment expenditure was far larger in the US than in Europe, and it even doubled between 1918 and 1935. The main reason seems to be the small and declining share in income; the smaller the expenditure item, the larger income elasticity if we assume expenditure increases linearly with income. The decline of live entertainment expenditure was largely caused by cinema, especially by talkies. The 'large-volume low-margin high-profit' part of live entertainment was automated away by cinema, while what remained split into a highly commercial metropolitan 'low-volume high-margin high-profit' part and

[47] Bourdieu (1979) argues that people consume entertainment to distinguish themselves socially, and that attendance of artistic, 'cultural' entertainment is almost exclusively constrained to the upper middle and upper classes. The attendance pattern of the parents predicts the attendance pattern of the children – in post-1945 France at least.

[48] Delpech (1938).

Table 4.7 *Annual leisure and related expenditure of 92 French families in Toulouse, 1936–1938*

Item	Expenditure (%)	Income elasticity (I)	Income elasticity (II)	% reporting
Dépenses intellectuelles	1.76	2.78	2.83	96
Dépenses culturelles	0.91	1.93	2.07	85
Distractions	5.79	1.39	1.32	99
		Distractions, breakdown		
Cinéma	2.31	0.63		
Théâtre	0.63	2.52		
Café	1.35	3.95		
Réunions sportives	0.87	1.18		
Pêche, boule	0.62	0.41		
Total	5.79	1.39		

Note: % reporting is the share of families that reported any expenditure on the item. Average of 92 families, based on income per family member. Average income was 1,762 francs, interval (I) over which elasticity is calculated is 281 francs/1208 francs, interval (II) is 281 francs/533 francs.
Source: Delpech (1938).

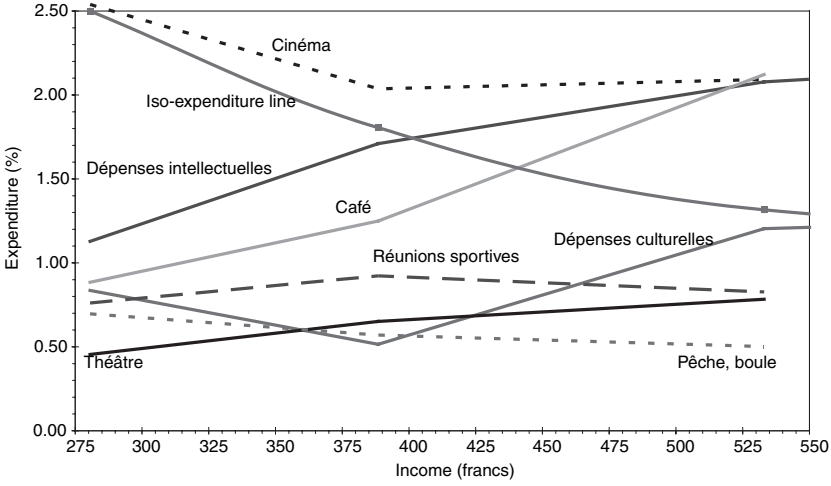

Figure 4.12 Annual leisure and related expenditure of 92 French families in Toulouse, 1936–1938
Source: Delpech (1938).

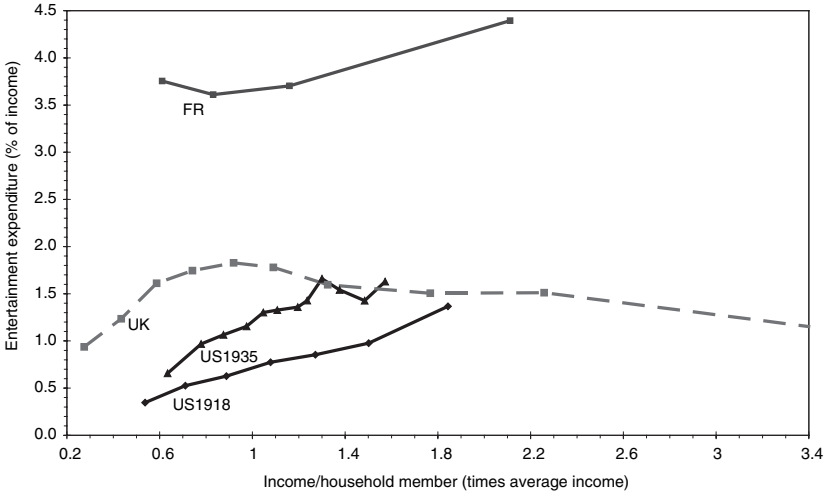

Figure 4.13 Entertainment expenditure across income groups, in share of average income, US, Britain and France, late 1930s
Source: see text.

a heavily subsidised 'low-volume low-margin low-profit' part (Bakker 2004a). In Britain and France relative live expenditure was far higher, suggesting that cinema was less of a perfect substitute, for example because most films shown were not in the consumer's mother tongue, or because those countries' live entertainment industries had a comparative advantage – lower relative prices – relative to the US.[49]

For all countries the entertainment income elasticities were lower than the amusements and vacations elasticities in 1890. Again, income elasticity could be expected to decline with increasing income over time, although this differs for times series compared to cross-sections. Only for the US, for 1918, was the income elasticity substantially higher than in 1890.

In the 1930s entertainment expenditure relative to income showed similar international differences as in 1890 (figure 4.13). Expenditure was highest in France and lowest in the US across all income classes. US and French incomes were less dispersed than British incomes, which contained extremes in both directions. Britain and France had flatter curves than the US. Between 1918 and 1935 American relative expenditure

[49] Part of the difference may be due to potentially biased samples for Britain and France; national total consumer expenditure estimates, below, show a far smaller difference between Britain and the US, although not between France and the US.

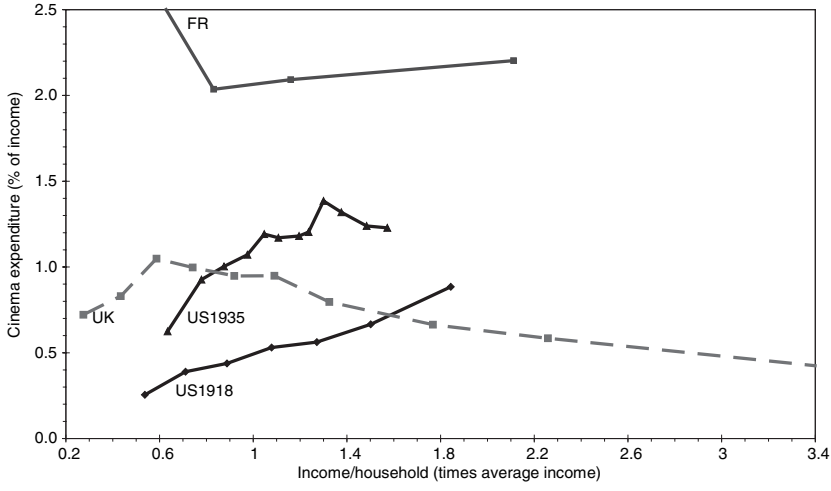

Figure 4.14 Cinema expenditure across income groups, in share of average income, US, Britain and France, late 1930s
Source: see text.

increased consistently for all income groups, although the shape became slightly steeper.

For cinema expenditure (figure 4.14) the pattern changed, and US expenditure overtook British expenditure at about 0.8 per cent of average income. Even 1918 US expenditure overtook British expenditure in the last income classes. Assuming the British curve would have been lower in 1918 as well, this suggests a similar US–UK pattern for that year. France showed a sharp drop in expenditure from the first to the second income class, and then a slightly increasing curve.

For live entertainment (figure 4.15), the order of magnitude difference between the US and Europe is clear, as well as a far slower increase with income in the US. British and French expenditures were close and exhibited broadly similar patterns.

Price and consumption data for 1938 enable the calculation of national budget constraints (figure 4.16).[50] It is evident that when a country could potentially buy more cinema tickets, it could also buy more live entertainment tickets. It is also clear that, while US and French relative prices were broadly similar, Britain had a far lower price for live entertainment and the latter's share was as much as 25 per cent, compared to just over

[50] For Britain, an estimate of expenditure on and quantity of tickets to sports matches had to be deducted to arrive at comparable data.

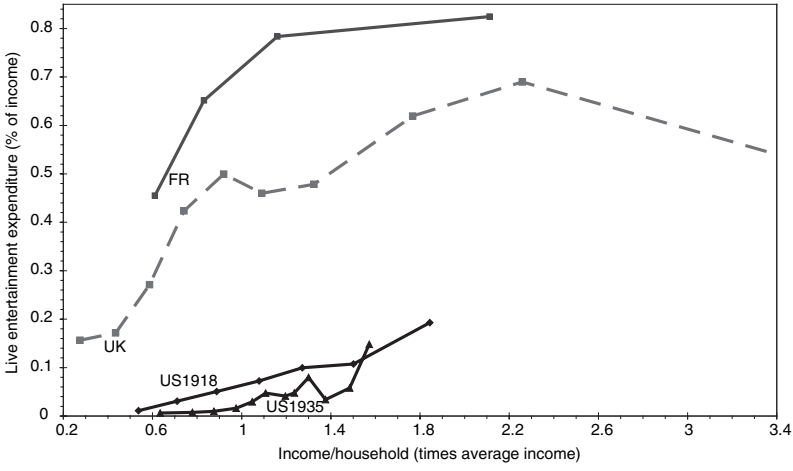

Figure 4.15 Live entertainment expenditure across income groups, in share of average income, US, Britain and France, late 1930s
Source: see text.

2 per cent in the US and 10 per cent in France. The disparity must have been due at least partly to a different organisation of entertainment production rather than exclusively to consumer preferences.

Fortunately, these international differences in consumption patterns can be formally decomposed into those due to differences in relative price ('technology') and those due to differences in consumer preferences ('taste'), using a methodology developed by Bakker (2007a). First, it is assumed that consumers chose to spend a constant income share on spectator entertainment, and then divided this between cinema and live entertainment. Second, it is assumed that the relative price – the slope of the budget constraints in figure 4.16 – largely reflected differences in production technologies rather than differences in demand.

Consumption preferences can be characterised by the quantity elasticity of substitution ε_{qs}, which defines the position of the data point on the budget constraint in figure 4.16. It is the percentage change in cinema-hours for a percentage change in live hours.[51] It is clear that

[51] Consumers chose a certain 'exchange rate', a certain value of ε_{qs}, which is defined as follows:

$$\varepsilon_{qs} = \frac{\%\Delta q_l}{\%\Delta q_c} = \frac{q_c}{q_l} \cdot \frac{dq_l}{dq_c} = \frac{q_c}{q_l} \cdot \frac{1}{TRS} = \frac{\alpha}{1-\alpha} \quad (1)$$

Where q_c is the amount of spectator-hours of cinema consumed, q_l the spectator-hours

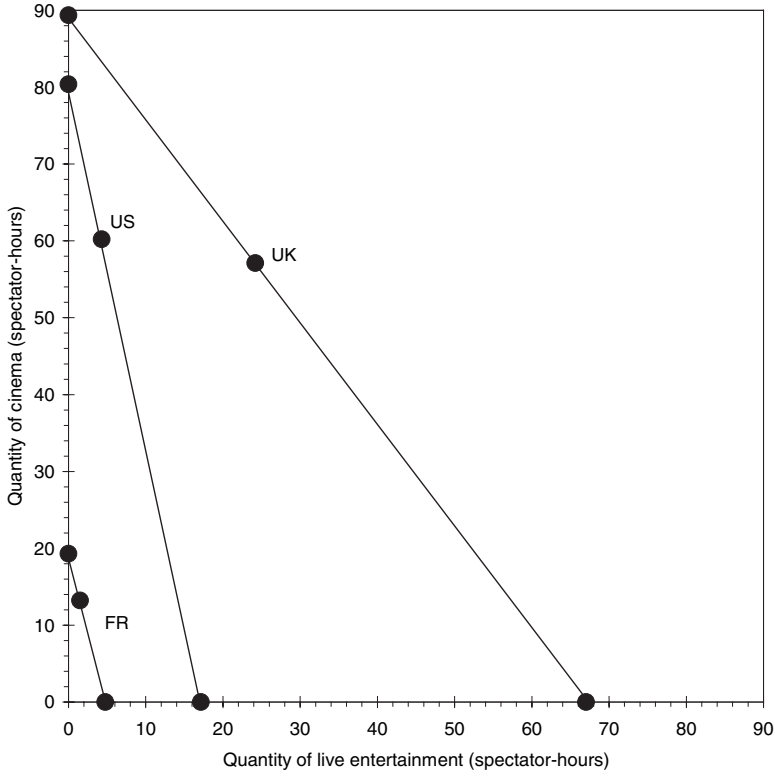

Figure 4.16 Live vs. filmed entertainment quantities consumed and budget constraints, average per capita, US, Britain and France, 1938
Source: corrected estimates from Bakker (2004a).

'consumer preferences', as proxied by this elasticity, were not the same across countries. The US had the incredibly high ε_{qs} of 11.3. If US consumers reduced their cinema spectator-hours by 1 per cent, they could increase live spectator-hours by 11 per cent. In France, ε_{qs} was 2.2, and in Britain it was only 2.0 (table 4.8). This suggests that besides technology, consumer preferences were important to explain national differences.

The difference between countries in the quantity share (γ) of cinema in all spectator entertainment consumed, can be decomposed into the

of live entertainment, TRS the technical rate of substitution and a the share of cinema expenditure in total expenditure on live entertainment and cinema.

Table 4.8 *Indicators of the consumption of live and cinema spectator-hours, Britain, France and the US, 1938*

	qc+ql	qc	ql	alpha	gamma	Pc/pl	Eqs
US	54.2	53.0	1.2	0.92	0.978	0.26	−11.34
UK	76.5	57.1	19.4	0.67	0.750	0.68	−1.99
FR	14.7	13.2	1.5	0.68	0.898	0.25	−2.17
Index (US=100)							
US	100	98	2	100	100	100	100
UK	141	105	36	72	76	263	18
FR	27	24	3	74	92	96	19

Notes: all figures are national averages per capita for 1938.
qc = the number of spectator-hours of cinema consumed.
ql = the number of spectator-hours of live entertainment consumed.
alpha = the expenditure share of cinema consumption.
gamma = the quantity share of cinema consumption.
pc/pl = the relative price of cinema over live entertainment.
Eqs = the quantity elasticity of subsitution of cinema for live entertainment.
Source: corrected estimates from Bakker (2004a).

effects of ε_{qs} ('taste'), differences in relative price p_c/p_l ('technology') and their joint effect.

To examine the effect of technology, tastes are kept constant and to examine the effect of tastes, technology is kept constant.[52] To measure the effect of technology, for example, the US relative price has been set at the UK relative price, keeping elasticity constant (table 4.9). The effects can be measured in two directions and the average effect, which cancels out the joint effect, gives a rough-and-ready estimate of the relative importance of technology and taste in explaining country differences.

[52] Using:

$$\gamma = \frac{q_c}{q_c + q_l}$$

$$\frac{q_c}{q_l} + 1 = \frac{q_c}{q_l}\frac{1}{\gamma} = \frac{p_l}{p_c}\varepsilon\frac{1}{\gamma}$$

$$\gamma = \frac{1}{1 - \frac{p_c}{\varepsilon \cdot p_l}}$$

This is consistent with Cobb-Douglas consumer preferences. For further details see Bakker (2007a).

Table 4.9 *The effect of relative price and quantity elasticity of substitution on differences in cinema consumption, US, Britain and France, 1938.*

	Total difference %point	In percentage-points Effects dpc/pl %point	de %point	joint %point	Total difference %	In percentage of total difference Effects dpc/pl %	de %	joint %
US to UK	−23.2	−3.4	−9.2	−10.5	100	15	40	45
UK to US	23.2	13.9	19.8	−10.5	100	60	85	−45
Average		8.7	14.5	−10.5		37	63	0
US to FR	−8.0	0.1	−8.4	0.3	100	−1	105	−4
FR to US	8.0	−0.4	−8.1	0.3	100	−5	101	4
Average		0.2	8.2	0.3		−3	103	0
UK to FR	15.2	14.4	1.6	−0.8	100	95	11	−5
FR to UK	−15.2	−13.6	−0.8	−0.8	100	89	5	5
Average		14.0	1.2	−0.8		92	8	0
	Index US to UK = −100							
US to UK	−100	−15	−40	−45				
UK to US	100	60	85	−45				
Average		37	63					
US to FR	−34	0	−36	1				
FR to US	34	−2	35	1				
Average		1	35					
UK to FR	66	62	7	−3				
FR to UK	−66	−59	−4	−3				
Average		60	5					

Notes: all figures are national averages per capita for 1938.
Total difference = difference in live as percentage of all spectator entertainment hours consumed.
dpc/pl = the difference in relative price (technology).
de = the difference in the quantity elasticity of substitution (taste).
Average refers to the average size of the effect in absolute terms, not to the direction.
Source: corrected estimates from Bakker (2004a: Appendix, tables A1, A2 and A3).

Thus, about three-fifths of the difference in relative cinema consumption between the US and Britain can be explained by technology and about two-fifths by taste. Given that the data are not extremely precise, this suggests that the lower price and differences in taste were about equally important for the large quantity of British live entertainment consumed.[53] In contrast, the difference between Britain and

[53] If we assume scale effects, a greater preference for live entertainment in a country could lead to lower relative prices. These scale affects appear to be different from the joint effects (of Eqs on pc/pl and vice versa).

France can be explained almost exclusively by differences in technology. The difference between France and the US, on the contrary, is far smaller and could be wholly explained by differences in taste.

These findings suggest that Britain had a clear comparative advantage towards live entertainment, the US towards cinema, while the situation of France was undetermined. Unfortunately for Britain, live entertainment could hardly be traded, meaning that a specialisation on live entertainment yielded less advantage to Britain than a specialisation on cinema yielded to the US.

Long-run changes in expenditure patterns

The above surveys can be compared at the cross-section level between countries and longitudinally within and between countries. In 1890, amusements and vacations had a far lower expenditure share in the US than in Europe. If we compare these findings with the 1900 expenditure share in GDP, estimated from independent sources,[54] the proportions between the US and Britain remain roughly the same, but French expenditure suddenly becomes far lower than US expenditure. However, the French survey was probably the most unrepresentative. All three country samples spent far more than the 1900 average per capita expenditure.

In the 1930s, the US again spent less on spectator entertainment than Britain, although the gap had narrowed. The entire difference was due to Britain's live entertainment expenditure, which was nearly an order of magnitude larger than that of the US, while cinema expenditure was lower. The US income elasticity was substantially higher. The French household expenditure data again appear unrepresentative, as survey expenditure is about six times the expenditure share of GDP. The share of live entertainment expenditure in the survey was a fifth, compared to over a third nationally. Sample income elasticities were higher than in Britain and lower than in the US. If one exclusively looks at the GDP share, French entertainment expenditure was extremely low, just over half of US expenditure and just over a third of British expenditure (table 4.10). This does not appear inconsistent with lamentations in the French trade press that the British film market was several times larger.

If we look at US expenditure patterns over time, it appears that the expenditure share changed little between 1890 and 1918, both for survey and GDP share indicators, although income elasticity nearly doubled. One reason may have been the rapid adoption of cinema

[54] See Chapter 11.

Table 4.10 *Comparison of benchmark year data on entertainment expenditure, US, Britain and France, various years, 1890–1938*

	US				Britain				France			
	1890	1900	1918	1935	1890	1900	1918	1938	1890	1900	1918	1937
Expenditure share of income (%):												
Amusements and vacations	1.11		1.16		3.50			2.62	3.88			
Cinema			0.49	1.10				0.81				2.31
Live entertainment			0.06	0.03				0.47				0.63
Income elasticity:												
Amusements and vacations	1.13		2.07		1.80				1.07			
Cinema			2.32	1.49				0.49				0.89
Live entertainment			4.40	8.16				1.22				1.54
Average income (current)	684		1,391	1,543	109			323	2,045			1,705
Expenditure as % of GDP:												
All spectator entertainment		0.32–0.43	0.37	0.82		1.00	0.71	1.19		0.07	0.22	0.49
Cinema				0.76				0.76			0.07	0.30
Live				0.06				0.43			0.15	0.19
Long-run GDP-elasticity 1900–1938												
Annual growth spectator-hours		9.19				3.01				11.10		
Annual real GDP-growth		2.26				1.11				1.38		
Average elasticity		4.07				2.71				8.06		
Arc elasticity		2.32				2.47				3.79		

Notes: US 1900 GDP-share shows lower and upper bound estimates (see Chapter 11; Bakker 2007b).
UK data concerns expenditure, not income.
The French household expenditure data is probably unrepresentative.

technology, which sharply reduced prices. Between 1918 and 1935 spectator entertainment expenditure doubled, again both for survey and GDP data. The income elasticity for cinema fell substantially, while that for live entertainment nearly doubled.

The British expenditure share in 1934–36 appears to have been lower than that in 1890, according to the survey data, but the 1890 survey may not be fully representative. GDP data suggest that the expenditure share declined somewhat in the thirty years between 1890 and 1920, although part of this may have been due to the war years. In 1920, for example, the expenditure share had increased to 0.95 per cent, and by 1923 it was 1.13 per cent. The 1938 GDP data suggest a modest increase in the expenditure share during the half century since 1890. Again, the adoption of cinema technology is probably an important reason why this share remained low, when some economists predict that expenditure shares on certain 'low-productivity' services such as entertainment should rise when real incomes increase, under certain conditions.[55] Income elasticities in 1938 appear to have been somewhat lower than in 1890.

The French GDP share of entertainment rose sharply between 1890 and 1940, although it remained comparatively small. One reason appears to be a high live entertainment expenditure share, 2.7 percentage points higher than that of Britain, and possibly a lower urbanisation level, which may have given cinema technology less of an advantage.

Comparing the three countries longitudinally reveals some intriguing patterns. While in the US and Britain the share of spectator entertainment remained stable between 1890 and the late 1910s, in France it increased sharply. In all three countries it then increased substantially during the interwar period. In France, the live entertainment expenditure share dropped dramatically, from over two-thirds of all entertainment expenditure in 1918 to just over one-third by 1937.

Using estimates on the quantity of spectator-hours sold in 1900 and 1938,[56] it is possible to estimate the long-run (arc) GDP-elasticity of entertainment consumption. This was 2.3 for the US, 2.5 for Britain and as high as 3.8 for France, on average (table 4.10). For all three countries, an increase of real GDP by 1 per cent increased spectator entertainment output by at least double that percentage, making long-run demand highly GDP-elastic. The high French long-run elasticity may be due to France's low GDP per capita compared to Britain and the US. All longitudinal GDP-elasticities were higher than the (declining and not comparable) income elasticity at the cross-section level, which underlines the tremendous impact that cinema had on spectator entertainment.

[55] Baumol (1967). [56] See Chapter 11.

Since both GDP and spectator-hours went up quite consistently, and given that the arrow of time makes it impossible to go in reverse through this historical period, it appears justified to use the 'average' elasticity instead of the arc elasticity (table 4.8). This shows again elasticities substantially above one, but a far higher elasticity in the US than in Britain, and an extremely high elasticity in France.

The lower income elasticities in the 1930s suggest that entertainment in general, and cinema in particular, had become less of a luxury. Motion pictures were less of a novelty, and expenditure was already substantial, even at lower incomes. Consumers thus found it harder to increase their utility by consuming relatively more cinema when their income increased. Moreover, by the 1930s, cinema had out-competed the low-value-added live entertainment. The rising price and perceived quality of the remaining high-value-added live entertainment increased its income elasticity.

The Depression may have also played a role in the declining luxurity of spectator entertainment. People may have felt constrained from spending more at higher incomes by the uncertain economic environment, and instead used it to save or for other purposes. The declining luxurity concurs with Owen's (1970) findings that leisure and recreation expenditure as a percentage of GDP increased substantially between 1900 and 1930, but then remained stable, at about 5 per cent of GDP, until at least the 1970s.

Conclusion

Several international differences in the structure of household entertainment expenditure have become apparent for the benchmark years. Both in the 1890s and in the 1930s, the European expenditure share on amusements was higher than in the US, and in the latter years Europeans spent far more on live entertainment. Second, France had the lowest expenditure share of GDP throughout the period, but by far the highest GDP-elasticity, suggesting that it was catching up.[57] The slower urbanisation in France may have meant it could benefit less from the scale economies of entertainment venues.

This chapter also identified several commonalities in expenditure patterns. For all three countries, in 1890 expenditure on 'amusements and vacations' ranged from 1 to 4 per cent, and by the 1930s, spectator

[57] This suggests that the French cross-sectional data (which were based on fewer respondents, 244 and 92, respectively) were the most unrepresentative of all three countries, as they do not concur with the national data.

entertainment alone varied between 1 and 3 per cent. This suggests a substantial increase in expenditure on 'amusements and vacations' as a whole. Second, for all three countries the data suggest that the income elasticity of demand for these items decreased substantially over time, although the elasticity generally was higher than that of demand for other recreation items. Third, for all three countries the long-run GDP-elasticity of spectator entertainment output was far above one. It was substantially higher than two in all three countries, as reflected in the sharply increasing GDP share. This concurs with Owen's (1970) findings for the US on the evolution of recreational expenditure as a whole, and suggests that these findings can be extended to European countries as well.

Detailed data on quantity and prices for Boston in 1909 show that cinema had a large share in quantity, but was dwarfed by opera and theatre in terms of revenue share. Cinema thus started as an innovation at the margins that initially captured part of the market previously served by other low-priced entertainment, such as burlesque and vaudeville, and partially also captured an entirely new market of consumers that had not experienced spectator entertainment before. The data also suggest that the price elasticity of demand was U-shaped. It was far above unity both at the highest and at the lowest prices, but substantially below one for the price range in between. This indicates that it probably took a long time before the growth and spatial concentration of consumer expenditure had increased the responsiveness of demand at low prices, before entrepreneurs had discovered it, and before the technology was adopted that could bring down costs concurrently. This is most likely what was happening by the late nineteenth century. The U-shaped price elasticity also meant that entrepreneurs that succeeded in matching the changing technology with the changing demand would be disproportionately rewarded by a sharp increase in sales. This makes it understandable why cinema was adopted so rapidly and widely during the 1900s.

This chapter and the preceding one have shown that the general evolution of demand was beneficial for the development of cinema and that it strongly rewarded those entrepreneurs that could offer spectator entertainment at lower cost or higher quality, or both. The next part will show how they did first the former and then the latter. It will examine how the film industry emerged in this demand environment and how it developed once it was there.

Part II

The rise of the international film industry

Introduction to Part II

> It is safe to say that in the future, the bulk of motion picture production will be done within easy reach of Manhattan.
>
> *Wall Street Journal*, 7 April 1924.

By the end of the nineteenth century the average citizen in the US, Britain or France could enjoy a greater amount and variety of pleasures than ever before. While a century earlier a large part of live entertainment had been restricted or forbidden, and the supply had been limited to pantomime, magicians and other non-spoken performances at fairs and random occasions, now a regular supply existed through venues such as music halls, theatres, pubs, cafés-concerts, vaudeville or burlesque houses and small penny gaffs. The quantity and variety seemed almost infinite, and the price was low enough to bring the regular enjoyment of at least some kind of amusement within the reach of many.

The previous part began with an examination of the evolution of live entertainment production and consumption after the liberalisations of the late eighteenth and the nineteenth centuries. The deregulations led to strong growth throughout the century and to the development of new technologies, such as larger theatres with higher seating capacities, mechanic staging techniques, heavily promoted extravagant productions, an increase in the length-of-run of plays and duplication by puppet theatres. Increasing overhead costs reflected the increasing scale and specialisation of theatres.

Deregulation also led to changes in the organisation of the theatre industry. While initially – after deregulation – many local theatres and companies had been set up away from the metropolises, falling travel costs forced national market integration. The management of theatre and the performing company separated, and travelling troupes replaced resident companies. Theatres linked up in circuits and the latter allied themselves through booking offices, carefully co-ordinating the supply of entertainment.

When organisational changes had reached their productivity frontier, and the supply of creative inputs and opportunities for further profitable

expansion had become strained, cinema technology was adopted to automate the work of creative inputs and improve co-ordination of entertainment among circuits. Motion pictures offered infinitesimal transport costs, unequalled reliability of supply, and an unlimited potential quantity.

The above developments were particularly apparent in the United States and Britain, but less so in France, where circuits were less prevalent. Yet all three countries had just one central live entertainment 'industrial district', where productions were launched and sent across the nation if successful. Not one country developed two independent, equally strong centres. They stayed with just one New York, one London and one Paris.

Theatre technology increased production costs, the number of performances per production and spectators per performance. It decreased average prices. All three countries saw the preconditions for high entertainment consumption emerge: more time and money, more people, and rapid urbanisation and transport networks that concentrated this demand spatially. Per capita entertainment consumption was probably highest in Britain and lowest in France, with the US in between.

France appears to have lagged behind slightly. It was far less urbanised than Britain and the US. It had a strong literary tradition of writers and playwrights, but surprisingly low entertainment consumption. This was possibly due to its centralised geography, with Paris as metropolis, which spatially concentrated the market, and which gave opportunities to many authors. The Paris advantage declined as transport costs integrated national markets, and further urbanisation created viable markets elsewhere as well.

Part II will investigate how, at the end of the previous era, when regional entertainment markets had integrated into national ones, the film industry emerged and started to integrate these fresh national markets into an international one. When film technology came around, entertainment markets did not fully integrate instantly, but did so only over time, in a process with many spurts and slow-downs. The maximum potential integration was probably only reached in the 1930s. During this process, the geographical and industrial structure of international entertainment production and distribution changed. To contemporary observers it was far from obvious that the film industry would eventually concentrate in Hollywood. As late as 1924, the *Wall Street Journal* predicted that 'the motion picture business of the next decade will be mostly within sight of the tower of the Woolworth building, except for tropical sets which can be made somewhere near Miami,

Fla., 42 hours from Broadway. ... It is safe to say that in the future, the bulk of production will be done within easy reach of Manhattan.'[1]

Chapter 5 examines the technological development of cinema, noting that it was not only a product innovation but also a process, market, supply and organisational innovation. The chapter considers how film technology, by standardising and automating entertainment and making it tradeable, carried forward a trend that began with live technology but could go no further in that form. Subsequently the chapter constructs and analyses time series to pinpoint the take-off of the film industry. Chapter 6 examines how, some years later, firms started a quality race by massively escalating their outlays on film production and marketing. This first resulted in industrial concentration and then in geographical concentration in Hollywood. Chapter 7 discusses how it could be that once this had happened, the resulting dominance of US film multinationals and of Hollywood remained fixed for the rest of the century, and the European and other film industries could not catch up. Chapter 8 aims to underpin these findings on a microeconomic level. Using film budget case studies, it explores what the jump in endogenous sunk outlays was spent on and how much of it went to creative inputs such as star actors and actresses or the rights to famous stories.

This part largely confines itself to the film industry, unlike the previous part, which examined both motion pictures and live entertainment and the final part, which will look at the impact of cinema on the economy at large.

[1] 'Movies come east from California', *Wall Street Journal*, 7 April 1924, 9.

5 The emergence of cinema

This chapter investigates the emergence of cinema from the world of live entertainment as analysed in the preceding part. It examines the pictures' technological origins, the time lag between innovation and take-off, and evaluates the extent to which cinema carried organisational and economic developments that began in live entertainment to new frontiers. It will also attempt to pinpoint the take-off quantitatively by identifying discontinuities in industry growth and comparing this with qualitative evidence.

The above agenda is an essential component of this book's thesis that motion picture technology industrialised entertainment. Without a time lag, and with no origins in live entertainment, film would have been far more an entirely new industry rather than part of a process of industrialisation. This chapter argues in addition that the one-off qualitatively new aspect that cinema offered that had no precedent in live entertainment was tradeability. This chapter also sets the scene for the quality race discussed in the next.

What follows is not a detailed descriptive history of early cinema in Britain, France and the US that tries to tell the 'complete' story, if that ever was possible. An entire book could be devoted to this. John Barnes, for example, used five volumes for the first five years of film in Britain.[1] Several other studies offer rich histories of the national motion picture industries.[2]

Origins: technology and preconditions

As with many innovations, the idea of cinema preceded the invention itself. Drawing an analogy with biology, Joel Mokyr distinguishes between phenotypes and genotypes of innovations. Phenotypes are the concepts of a new product or process, genotypes the actual technique

[1] Barnes (1998). [2] They often adopt a film studies perspective. See the introduction.

or product. For an invention to emerge, it is often necessary for the inventor to first conceive the invention in his mind.[3]

It is difficult to give an exact date to the emergence of the idea or concept of cinema. The phenomenon of the persistence of vision, the tendency of the eye to continue to see an image a fraction of a second after it has disappeared, was already known to the Greek philosophers a few hundred years before Christ. Many other aspects of cinema had been discussed by philosophers and scientists in the subsequent millennia. Since the first projection of moving images dates from the 1850s, and the first patents on the taking and projection of motion pictures were filed in 1860/61, the more specific idea of applying all these concepts into one technology must have emerged at least some time before the mid-nineteenth century.[4]

Many visual devices and gadgets preceded cinema, too many to list here in detail. As it was introduced in the late 1890s, cinema was based on seven important technologies, ideas or concepts. First, it was based upon photography, invented in the 1830s. It was also based upon two further innovations in photography. The separation of the process of photography by first taking pictures on a negative, and only later making as many positives as one wants, was important for cinema technology, as it enabled duplication and made faster picture-taking possible. This innovation took place in the late 1880s, and became the industry standard after the introduction of the Kodak pocket camera by George Eastman.[5] The third innovation, the roll film, made it possible to take many pictures – a hundred in the first Kodak camera – without having to change film. Experiments with roll film started in the 1850s, and again it became the standard with the launch of the Kodak camera.[6]

Fourth, celluloid was important. The first Kodak roll films used paper as a base, but since film cameras use large rolls, paper was not strong and reliable enough. Celluloid could do the task, although for film cameras thicker strips of celluloid were used than for photo-cameras. Celluloid was invented in 1868, by J. W. Hyatt. For the first twenty years it was mainly used for things such as billiard balls. In 1888, it became available in sheet form, which made it possible to use it for photography.[7] William Goodwin filed a patent for the manufacturing of sheets of celluloid in 1887, which was only granted in 1898, after a fierce legal battle between Goodwin's heirs and George Eastman.[8]

[3] Mokyr (1990: 275–8).
[4] Michaelis (1958: 734–51). See also Chanan (1996) which studies the prehistory of cinema and its roots in the nineteenth century world.
[5] König and Weber (1990: 527–30). [6] *Ibid.* [7] Friedel (1979).
[8] Michaelis (1980).

Fifth, a major obstacle for the invention of the motion picture camera was the low sensitivity of the photographic emulsion, which made it impossible to take pictures at high speed, and thus film motion. For the early portraits, people had to sit still for several seconds, and for motion pictures this simply could not be done. In the late 1880s when new emulsions were tried, the sensitivity of film finally was so much improved that the minimum length of exposure shortened sufficiently to make motion picture-taking possible.[9]

Sixth, the concept of projection was important for motion pictures, although in Edison's original invention, projection was lacking. The idea of projection was old, and had already been applied in the camera obscura, first constructed in 1645, which projected views in a dark room for painters. Around the same time Anastasius Kircher built a special room to project images with mirrors, which looked somewhat like a cinema. A dedicated building with several operators using specialised equipment was necessary to project the images.

About a decade later, in 1659, the Dutchman Christiaan Huygens invented the magic lantern, an easy, portable device that could project images painted on a glass plate. Huygens' interest was mainly scientific, but in the 1660s, the first showman, Thomas Walgensten, a Danish teacher and lens grinder living in Paris, travelled Europe giving exhibitions of the marvellous magic lantern. Not much later, a vibrant business of travelling showmen, equipment manufacturers and slide painters emerged. At least from the 1740s onwards, magic lantern shows were also given regularly in the US.[10]

In 1799 the Frenchman Etienne Gaspart Robert became well known for his spectacular shows with magic lanterns in Paris, which he named the Fantasmagorie. Robert used several projectors moved by operators to get larger and smaller images, smoke, sound effects and many other tricks and gadgets. The audience would see, for example, a ghost becoming larger and larger as if it was flying into the audience and then at the last moment it would disappear. In the early 1800s, Robert and his Fantasmagorie also travelled to Britain and the United States, where he asked a one-dollar entry fee.[11]

From 1851 onwards, when the projection of photographic slides became possible, the magic lantern became wildly popular, and the industry started to grow quickly. In 1863, P. T. Barnum sank thousands of dollars in a special projection room inside his American Museum in Brooklyn, which became one of its main attractions. Several firms had

[9] Musser (1990: 45, 65). [10] *Ibid.*: 17–20. [11] *Ibid.*: 24–5.

employees colouring the photographs. In the US, the hand-coloured slides cost about four to five dollars a piece.[12]

A few specialised British and French slide suppliers dominated the trade. They collected photographs from all over the world in London or Paris, and distributed them quickly again to all corners of the globe. The largest firm was probably the French Levy and Company, which was acquired by the American firm of Benerman and Wilson in 1874. The photographic lantern slides enabled people to get used to sitting in a room and watching pictures of far-away places, and, for the first time, to seeing pictures of news events that they had read about.[13]

Seventh, the idea of slicing a view with movements into small dissections, each of a fraction of a second, combined with the idea that when this was shown the audience would see movement because of the persistence of vision, was important to cinema. The notion of the persistence of vision was old, and had been used in several of the visual gadgets of the nineteenth century, such as the Thaumatrope of J. A. Paris, first demonstrated in 1826, which gave the illusion of a moving image.

In 1853, during a spectacular show, motion pictures were shown for the first time: a cartoon with moving characters, lasting thirty seconds, was projected on a screen for an audience. Interestingly, it never got beyond this single projection, and the idea was not given further work.[14] The idea to dissect a view, however, was newer, and started with the photographs of Marey to capture the movement of horses in 1872, followed by the American Eadweard Muybridge in the same year. The astronomer Jansen used the concept in 1874 to make observations of Venus.[15]

Origins: the innovation process

After the preconditions for motion pictures had been established, cinema technology itself was invented. In 1860/61 patents had been filed for viewing and projecting motion pictures, but not for the taking of pictures. The scientist Jean Marey completed the first working model of a film camera in 1888 in Paris. Edison visited Demeney in 1888 and saw his films. In 1891, he filed an American patent for a film camera, which had a different moving mechanism from the Marey camera. In 1890, the Englishman Friese Green presented a working camera to a group of enthusiasts. In 1893 the Frenchman Georges Demeney filed a patent for a camera. Finally, the Lumière brothers filed a patent for their type of camera and for projection in February 1895. In December of that year

[12] Michaelis (1980); Musser (1990: 30–6). [13] *Ibid.*
[14] Michaelis (1980: 736–7). [15] Musser (1990: 48); Michaelis (1980).

they gave the first projection for a paying audience. They were followed in February 1896 by the Englishman Robert W. Paul. Paul also invented the 'Maltese cross', a device which is still used in film cameras today. It is instrumental in the smooth rolling of the film, and in the correcting of the lens for the space between the exposures.[16]

Several characteristics stand out in the innovation of film technologies. First, it was an international process of invention, taking place in several countries at the same time, with the inventors building upon and improving each others' inventions. This concurs with Mokyr's notion that during the nineteenth century innovations increasingly depended on international communication between inventors.[17] Second, it was what Mokyr calls a typical nineteenth-century invention, in that it was a smart combination of existing technologies.[18] Many different innovations in the technologies which cinema combined had been necessary. Third, cinema was a major innovation in that it was quickly and universally adopted throughout the Western world, more rapidly than the steam engine, the railroad or the steamship.

Schumpeter distinguishes between product, process, market, supply and organisational innovations.[19] Cinema was an innovation in all these five respects. It was a product innovation in a narrow sense that the camera, the film-roll and the projector were new products; it was a product innovation in a broad sense because motion pictures were a new product that provided a new service. It was a process innovation in that it lowered the production cost (per spectator-hour) of entertainment and standardised its quality. It was a market innovation in the sense that it opened up new markets for the entertainment industry; many poor people that visited the cinema were people who could not afford theatre or vaudeville. Cinema was a supply innovation in the sense that it provided the theatre buildings with a new, steady and reliable supply of entertainment. Before cinema, travelling companies regularly cancelled or were delayed, and efficiency requirements made only a few routes feasible throughout a country, which ran from theatre to theatre, thus constraining supply. Cinema ended the scarcity of supply, rendering it unlimited.

Cinema was an organisational innovation in the sense that it changed the organisation of the entertainment business. Where before productions were developed and rehearsed and then performed for seasons by the creative inputs, now all the organisation of production was focused

[16] *Ibid.*; Musser (1990: 65–7); Low and Manvell (1948).
[17] Mokyr (1990: 123–4). [18] *Ibid.* [19] Schumpeter (2004).

on making a prototype, after which creative inputs were immediately available for the next prototype. Where once distribution, called 'booking', was done with a long-term view, with successful productions travelling for several seasons in a row, now all organisation of distribution was focused on the short time-span after the release of the film. After a release was completed, the whole organisation focused on the next release. Where once a theatre needed a whole collection of technical supplies, stage space, and special lighting, it now needed only films and a few supporting acts. Distribution and organisation within the theatre became simplified, standardised and automated, while all complexity was transferred to film production, entirely outside the theatres, in a dedicated space, in which production activities were highly specialised and co-ordinated.

The fact that cinema was all things to all innovations underlines its importance.

The relation to the existing entertainment industry

When compared with theatrical live entertainment in the nineteenth century, the growth of cinema can be considered as a continuation of the separation between ownership and management of the theatre and ownership and management of the production company. In the film industry the management of the two was necessarily split – although in the long run ownership was not always separate.

The introduction of cinema technology changed the existing spectator entertainment business in three ways: through automation, standardisation and tradeability. In the nineteenth century there was a drive to increase the productivity of live entertainment: first by having large-size theatres, which increased the number of spectator-hours that one performance could provide; then by forming circuits of theatres and quickly moving creative inputs around those theatres, again to maximise the number of spectator-hours they could provide; and, finally, by forming centralised booking offices, that tried to route the different acts in the most efficient and most profitable way through the circuits and the country. Further, rents that could be captured from a successful play were maximised by sending out duplicate companies throughout the country. As more and more came to depend on the initial production, production costs gradually rose, as did the length-of-run of successful plays.[20]

[20] See Chapter 2.

Cinema can be seen as a continuation of these attempts to increase productivity. Cinema again increased the number of spectator-hours that could be reached by a performance, in theory to infinity. It automated the performance in the sense that the piece had to be performed only once perfectly, and then an infinite number of copies could made of that prototype. The circulation of these copies through cinemas resembled the travelling duplicate companies. Further, throughout the existence of the film industry, production costs rose, as did the length-of-run of individual films.[21]

Automation not only yielded economies of scale in reproducing the performance, but also a higher reliability. Performers could fall ill, could have a disagreement, or could strike. Likewise, some travelling companies were highly dependent on weather conditions. In the US it was said, for example, that thirty days of rain would deprive a tent show of its season's profits. In the summer of 1869, which started with a month of rain, only six out of twenty-eight wagon shows touring the country survived the 'tenting season'.[22] Circuses often had to work around the clock to turn out enough performances to cover their operating costs. In the early 1900s, for example, the Barnum and Bailey circus, which had a daily overhead cost of about $10,000, could not always get seats and tents up fast enough to give two performances a day, which could be disastrous for its profitability.[23] The automation of entertainment production alleviated the problem of ensuring a reliable supply.

Second, in the nineteenth century, live entertainment became more standardised, as many resident stock companies in the provinces gave way to travelling and duplicate companies. At the same time, the costs of stage production increased considerably, but could be recouped by the increase in the number of performances of a successful play – the length-of-run – and by sending successful plays out to the provinces. This standardisation was continued by cinema, which standardised the performance, and made it possible to send copies out everywhere. The great bulk of the costs were now put into the first prototype performance. After that every consumer saw the same film without variations in actors, sets and stages, or quality of acting.

Third – and this is something that hardly had a predecessor in pre-cinema, 'pre-industrial', live entertainment – cinema technology made entertainment a tradeable intermediate product for theatres. Before cinema, the impossibility of trading entertainment performances hampered international market integration. An international market only existed

[21] See Chapter 6. [22] Chaplin May (1932: 296). [23] *Ibid.*: 231.

for high-end entertainment such as opera and the metropolitan legitimate theatre, and then only in production factors: the creative inputs – not in the performances.

Extraordinary exceptions were the circuses, which often made international tours and thus sold the performances themselves in an international market. The sparse surviving business information of the early circuses suggests that the scale of some of these businesses was substantial. In the 1870s, for example, James A. Bailey made an international tour with his circus, from California to Australia, Java, New Zealand, Peru, Chile, Argentina and Brazil. This was a huge undertaking: the transport costs, only a part of all costs, were already considerable for the time. Bailey had to pay $17,000 to ship his circus – including six elephants, a rhinoceros and many other animals – from California to Sidney, and $32,000 to get it from New Zealand to Chile. Subsequently he had to spend many thousands of dollars more to transport it over land. In two years, Bailey crossed 76,000 miles in Latin America alone. Despite all these costs, it must have been a profitable venture, as Bailey used the proceeds of his tour to buy up an established circus and merge it with his own, thus becoming the major competitor to P. T. Barnum.[24]

Nevertheless, circuses were the exceptions: available figures suggest that before the advent of cinema, the international movement of creative inputs took place on a limited scale only. In the two centuries between 1583 and 1788, for example, only fifty-seven visits of British entertainers to France, either as individuals or in groups, have been traced, a single fifty-eighth visit having taken place between 1788 and 1795.[25] The travels of creative inputs in other directions may have been more frequent. Cyril Ehrlich, for example, calculated that between 1675 and 1750, not less than 112 Italian composers lived in Vienna, 83 in London and 50 in Paris.[26]

In the nineteenth century, the international flow of creative inputs probably increased. Between 1819 and 1855, 3,807 British performers immigrated to the United States, an average of 106 a year, and 0.08 per cent of all immigrants.[27] By the 1820s, the anti-British feelings had declined, and many English actors starred in American theatres, bringing in enormous box office revenues. The New York Park Theatre, for example, contracted a steady stream of actors that starred in its

[24] *Ibid.*: 120. Later Barnum's and Bailey's circuses merged.
[25] Counted from the survey in Leathers (1959: 167–9).
[26] Ehrlich (1986: 17).
[27] Of these 3,807 performers, only 598 were actors and 729 were musicians. The rest were 'artists'. Calculated from Bromwell (1969). On European actors in the US, see Williams (1998), who deals mostly with British actors.

theatre and were then franchised out to other theatres. Between 1825 and 1830, Stephen Price, the owner-manager of the Park, even moved to London to manage the Drury Lane theatre and assure his Park Theatre of a steady supply of new leading actors.[28] Given high transport costs and the need to offer a higher or different quality than foreign talent could, only for the most valuable creative inputs could international travel yield substantial financial benefits.

The market for the rights to productions was integrated internationally to a substantially larger extent – at least for high-end entertainment. Between 1815 and 1848, for example, three operas – Rossini's *Almavia o Sia l'Inutile Precauzione* and *La Gazza Ladra*, and Auber's *La Muette de Portici* (which set off the Belgian revolution of 1830) – were staged seventy times in over thirty territories,[29] from Batavia to Buenos Aires, from Helsingfors to Algiers.[30] Only a minority of the stagings, twenty-three, were exclusively in the original language, all the others had at least some performances in the local language. Likewise, between 1847 and 1875, three other operas – Guiseppe Verdi's *La Traviata* and *Un Ballo in Maschera*, and Charles François Gounod's *Faust* – were staged fifty-nine times in about the same number of territories.[31] Between 1875 and 1914, Richard Wagner's opera *Siegfried* was staged twenty-six times, nine of which were in German, across at least seventeen territories.[32]

Even so, to a certain extent an international market existed in the rights to stage plays. In Britain, out of 3,614 theatre-weeks produced in the five years from 1893 to 1897 (one theatre-week being one play staged for one week in one theatre) 78.4% were of British origin, 14.8% were French, 5.4% from the US, 0.8% from Germany, and 0.5% from Norway. The plays of foreign origin had less popular appeal than domestic plays. British plays had an average of 12.7 theatre-weeks per play, a French one averaged 11.6 theatre-weeks, while a US play yielded only 7.3 theatre-weeks, on average. German and Norwegian plays performed even worse, with 3.1 and 2.1 theatre-weeks per play, on average.[33]

[28] McDermott (1998: 182–215, 196–202).

[29] The word territories is used somewhat loosely here for countries, colonies, and regions with a different character; Java, Algeria, Scotland and Norway, for example, are all territories.

[30] Counted from map in Hobsbawm (1997: 378–379). On the Belgian revolt, see p. 333.

[31] Counted from the map in Hobsbawm (1975: 317). Besides these three grand operas, twenty-nine stagings of light operas by Jacques Offenbach, *Orphée* and *Belle Helène* were counted, as well as three stagings of Wagner's 'highbrow opera' *Tristan und Isolde*.

[32] Counted from the map in Hobsbawm (1987: 356).

[33] Calculated from Woodfield (1984: 18–19). Eight of the nine Norwegian plays were Henrik Ibsen's. It is unlikely that the 3,614 theatre-weeks surveyed in Woodfield constituted the total produced.

An integrated international market was thus the exception rather than the rule in the entertainment industry. Some fashions spread quickly internationally through the world of the late nineteenth century, but this was obviously without a commercial organisation behind them, as the fashions did not constitute tradeable products or rights. The Andalusian flamenco, for example, enthusiastically taken up from the 1880s by populist Spanish intellectuals, quickly spread through the rest of Europe. The tango, a product of the brothel quarter of Buenos Aires, reached Europe in the 1900s. Even the African-American jazz music that had already reached Europe before the First World War – through the stage, through commercialised popular music and through social dancing.[34]

International market integration also existed to some extent in publishing: the rights to popular serial novels were traded internationally, with a few publishers, such as the German Eichler from Dresden, specialising in international licensing of those works. Further, a trade in foreign rights to literary novels existed, which during the nineteenth century gradually replaced outright copying without permission.[35]

In most countries, the market for spectator entertainment was integrating to the fullest extent possible on a national scale with existing live entertainment technology. In Britain, for example, during an opera tour in 1865, the producer Colonel Mapleson managed to turn out 120 concerts in 70 towns in 2 months, the maximum possible at the time.[36] By the early twentieth century this process of market integration had reached its limit. In Britain, by 1900, for example, every Sunday, 142 special trains drove through England and Wales to transport theatre groups and other performers to their next venue.[37] Charles Chaplin regularly performed in three different music halls each night – the maximum number of performances he could produce with the existing technology.[38]

At times the effects of railways on market integration may have been two-sided. In the US in 1871, for example, William Cameron Coup, a circus operator, discovered that by equipping a private circus train, the smaller towns which were hardly profitable (but were visited since they lay on a route) could be skipped. In the night, the train could drive 50 to 100 miles to the next large town, thus increasing the number of performances a circus could give, as well as the number of highly profitable towns that it could visit. This was an important innovation, since circuses had high operating costs. Soon other circuses followed the

[34] Hobsbawm (1987: 237). [35] See, for example, Caves (2000: 311–13).
[36] Mapleson employed two groups of singers. Ehrlich (1986: 55).
[37] *Ibid.*: 56. [38] *Ibid.*: 195.

example of Coup, and from then on many smaller towns had to do without a circus visit.[39]

As Chaplin himself would experience later on in his career, cinema turned the existing technological configuration upside down and boosted the productivity potential of the entertainment industry. The potential number of performances increased to infinity, and – again as Chaplin would later experience – the artist's pay also went a substantial way in that direction.

Theatres did not have to contract actors any more, but instead received reels of celluloid which they could put into a machine. The service part then consisted only of such things as the showing of the reels, selling rights to see the reel, keeping order and, until the coming of sound in the 1920s, adding music or commentary to the picture, and interspersing it with some live entertainment. The stage management at a local level became considerably less important. Further, because film made entertainment tradeable, the reliability of supply increased. Before, the theatre manager had to hope that the travelling company actually showed up as promised, that they were not re-routed by the booking office, that nobody fell ill and that there were no delays with travelling. With cinema, all this changed.

Automation and standardisation carried forward a trend already begun in the nineteenth century. The third aspect of film technology, tradeability, was entirely new. All three reinforced and maximised the national market integration of entertainment. In addition, the third dimension also integrated international entertainment markets into one world film market. Part of entertainment provision was transformed from a service into an intermediate tradeable product, protected by a copyright.

With the increase in length, film became an ever better substitute for live entertainment. Initially films were short, but gradually the length came closer to that of a play or a vaudeville program. In 1910 the average film-length in the US market was about 700 feet, about 10 minutes. By 1920 it had risen to three-quarters of an hour. Since this is an average length, it reflects feature films of sixty to ninety minutes surrounded by many shorts such as cartoons, newsreels and travelogues.

Growth phases of the film industry

Several factors were affecting the growth of the industry between 1890 and 1910. Innovations steadily improved film technology and rising

[39] Chaplin May (1932: 196–7).

demand for entertainment made it more attractive to entrepreneurs. The initial absence and subsequent pace of development of a dedicated distribution delivery system – cinemas exclusively used for showing films – served as a limit to the development of film production and distribution. The early development of the industry can be separated into three different stages: technological origins (1890–95), the travelling cinema (1895–1905) and the emergence of a system of fixed cinemas and distributors (1905–10).

The United States

The first period started with Edison's development of the Kinetoscope, a coin-in-the-slot device that allowed individual viewers to watch a film. The machines were exploited at fairgrounds, in amusement parks and at some city centre locations. The Edison Manufacturing Company made the films, and three outside companies marketed the machines and films: the Kinetoscope company sold them to entertainment and fairground entrepreneurs, Maguire & Baucus exported them through the Continental Commerce Company, and the Kinetoscope Exhibition Company focused on their exploitation in entertainment places.[40] Not much is known about the profitability of the Kinetoscope. In October 1894, the Kinetoscope Company was printing 120 positive films a week, and was buying additional printing machines to be able to print more. Its profits during September 1894 were over $8,000. Prices of the films varied from $10 to $25, the latter amount being equal to the fee paid to a vaudeville act.[41]

The Kinetoscope's revenues and profits declined during 1895, when the Lumière brothers in France invented projection, which marked the start of the second period. Between 1895 and 1905 cinema was generally a mobile business. Travelling showmen made films of the cities and villages they visited and showed them to the people.[42] Cinema was mainly a trick and a gadget. The first projections, from 1896 onwards, attracted large audiences. Lumière had a group of operators who travelled around the world with the cinematograph, and showed the pictures in theatres. After a few years, around 1900, films became a part of the program in vaudeville and sometimes in theatre as well. Also around 1900, travelling cinema emerged: cinemas which travelled around with a tent or mobile theatre and set up shop for a short time in towns and villages. These differed from the Lumière operators and

[40] Musser (1990: 67–86). [41] Hendricks (1983).
[42] See, for example, Musser (1991); Fuller (1994).

others in that they catered for the general, popular audiences, while the former were more upscale parts of theatre programs, or a special program for the bourgeoisie.[43]

This whole era, which in the US lasted up to about 1905/06, was a time in which cinema seemed to be just one of many new fashions. It was not at all certain whether it would persist, or whether it would be forgotten or marginalised quickly, such as happened to the boom in skating rinks and bowling alleys at the time.

This changed between 1905 and 1907, when Nickelodeons, fixed cinemas with a few hundred seats, emerged and quickly spread all over the country.[44] From this time onwards cinema changed into an industry in its own right, which was distinct from other entertainments, since it had its own buildings and its own advertising. The emergence of fixed cinemas coincided with a huge growth phase in the business in general; film production increased greatly, and film distribution developed into a special activity, often managed by large film producers. However, until about 1914, except in cinemas, films also continued to be combined with live entertainment in vaudeville and other theatres.[45]

One way in which entrepreneurs discovered the potential of fixed cinemas were the Hale's Tours venues. Hale's Tours, run by two entrepreneurs, sold a patented two-railcar wooden house with projection equipment, at a price of $7,000. Spectators would enter the railcar as if they were entering a train and then watch pictures filmed from a train perspective, while the car moved and shook. The concept proved popular. An entire show lasted twenty to twenty-five minutes, of which fifteen minutes were devoted to the film itself. Admission was generally 10 cents. A full venue could contain about sixty 'passengers' and it was reported that it could do showings twenty- to seventy-five times day, reaching a daily turnover in the range of $120 to $150. According to a trade paper, at one time there were 500 Hale's Tours shows running in the US.[46]

The entrepreneurs, George C. Hale and Fred W. Gifford, sold their films for 15–22 cents a foot, and bought the films back at a lower figure after their showing had finished. The Selig catalogue of August 1906 listed twenty-five different films, with a length ranging from 445–635 feet, which comes down to an average running time of about ten minutes per title, quite long for that period. One 600-foot film was priced at $70. Hale and Gifford sold territorial rights and made substantial profits.

[43] Musser (1990: 140, 299, 417–20). [44] *Ibid.*
[45] *Ibid.*; Allen (1980). [46] Fielding (1983).

British rights alone, for example, sold for $100,000, it was reported, while Hale's total profits on its tours were estimated at $500,000.[47]

After the summer of 1906, the novelty of the concept had worn off, and sales declined rapidly. At that time, Nickelodeons, small neighbourhood cinemas, were arising, showing a more varied offering of films, and partially taking over the role of Hale's Tours.[48] The latter played a role in an entrepreneurial discovery process in which entrepreneurs gradually discovered and developed the vast profit potential of cinemas.[49]

We can thus place the take-off of the film industry in the period between 1905 and 1907. In these years it developed its own retail outlets and no longer depended exclusively on theatres and travelling showmen. From this time onwards the business also came to be seen as more than just a fad or fashion like skating rinks and bowling alleys. At the same time an increase in its growth pace started. Slowly but gradually some people substituted cinema for small-time vaudeville and 'popular-priced theatres'.

The total length of the negatives of films released on the American market initially showed the pattern of the rapid diffusion of an innovation (figure 5.1). Then, from 1899 to 1906, a stabilisation took place, after which the number grew sharply again. At the same time, the average film length increased considerably, from 80 feet in 1897, to 700 feet in 1910, to 3,000 feet in 1920. As a result, the total released length, the best indicator of production, rose more rapidly than the number released, especially between 1906 and 1910, the time the film industry took off and fixed cinemas emerged all over the US: first in small five-cent theatres with at most a few hundred seats, the Nickelodeons, later in larger and more expensive movie theatres. The released length increased by four orders of magnitude, from 38,000 feet in 1897, to 2 million feet in 1910, to 20 million feet in 1920.

From figure 5.1, however, it is not immediately apparent that the film industry took off between 1905 and 1907, as substantial growth took place also before and after those years. Given that cinema was a new industry, it is possible, however, to look at the percentage change in market size over the percentage change in the age of the industry, a measure that could be called 'the age elasticity of demand'. In a young and small industry, large rises in market size are relatively easy, as the industry is very small compared to the rest of the economy. Therefore a large change in demand is less surprising in a young industry than in

[47] *Ibid.* See also Ramsaye (1926: 429). [48] Fielding (1983).
[49] On entrepreneurship and the discovery process, see Kirzner (1985, 1973).

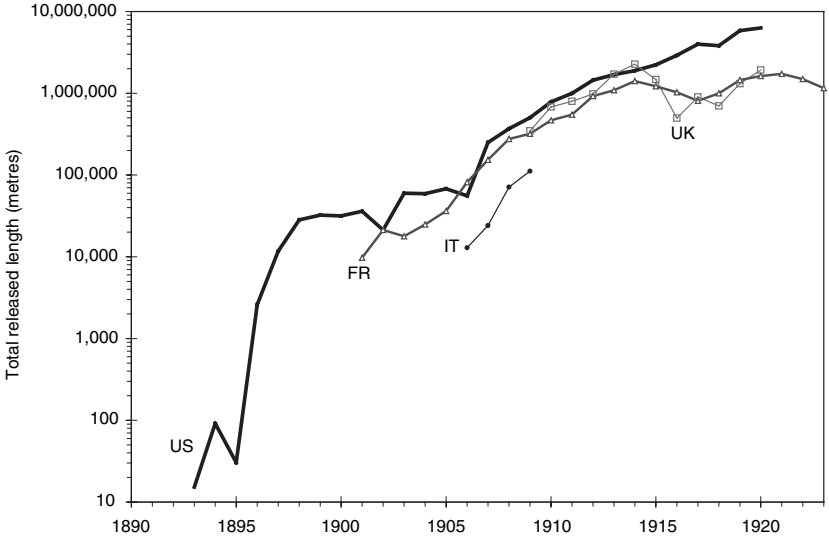

Figure 5.1 Total released film negative length, US, Britain, France and Italy, in metres, 1893–1922

Note: See Bakker (2005a, appendix I) for the method of estimation and for a discussion of the sources.

Sources: Bakker (2001b); American Film Institute Catalogue 1893–1910; Motion Picture World 1907–1920; Cine Journal 1908–1923. French data between 1901 and 1907 have been obtained by calculating a weighted growth index from the growth indexes of Gaumont (1/3) and Pathé (2/3) of their released negative length, as reported in Meusy (2002: 427). This growth index is then linked to the Cine Journal length-series and used to compute length from 1901 to 1907. The years 1908 to 1910, for which both data-sets are available, suggest that the growth rates are quite comparable, although not exactly the same. Italian data from Redi (1995), as quoted in Meusy (2002: 420).

an older industry. The age elasticity of demand takes this into account, as the percentage increase in industry age becomes correspondingly smaller, by definition. A given percentage increase in demand will therefore result in a higher elasticity for the older industry. This is reflected by the slope in a log-log diagram (figure 5.2). It is immediately clear that this slope was steepest between 1906 and 1907, followed by a continuous, slightly flatter slope, and that we could therefore date the take-off at about 1907. There was also a considerably steep slope from 1895 onwards, but the steepness declined over time, until it reached stagnation in the early 1900s. This was basically the emergence of cinema technology from an extremely low base, not a take-off.

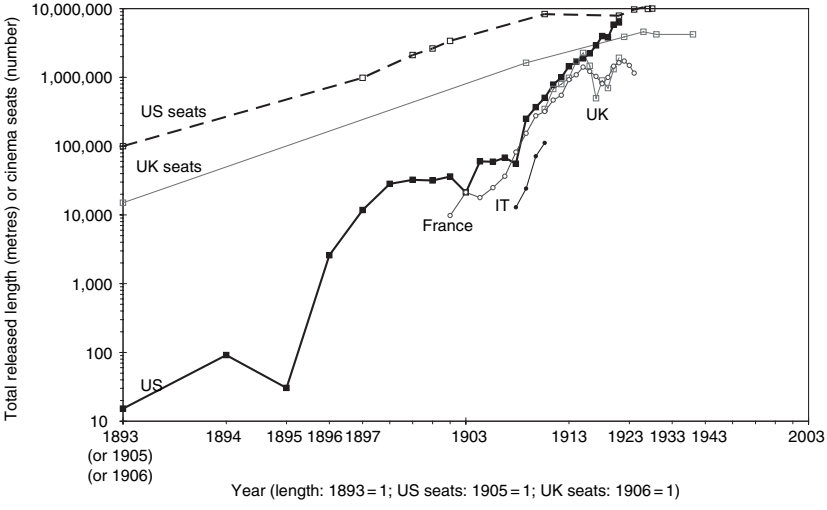

Figure 5.2 Total released film negative length and cinema seats, US, Britain, France and Italy, in metres, 1893–1922

Source: Length: see figure 5.1. US cinema seats: Hampton (1931); Wood (1986). UK cinema seats: Kinematograph Yearbook 1915, 1920, 1927, 1939; Low (1949: 50–1); Political and Economic Planning (1952: 37, 81); Wood (1986: 120). Seats for 1906 are an educated estimate.

The number of cinema seats showed a relatively constant growth from 1905 onwards, with some acceleration from 1909. The overall growth rate was lower than that of released negative length, and it reached a clear saturation point after the 1920s, with one more short spurt in the late 1930s. The slower growth may be due to the fact that increases in seating capacity involve more exogenous costs, and therefore would necessarily be slower. Further, films could be projected in places that also showed stand-alone live entertainment, making industry growth initially only partially dependent on the growth of seating capacity.[50]

Britain

Although many new film companies were set up, initially Britain did not have the large, fast-growing film enterprises that started to exploit the new technology in an industrial, highly organised and automated way and on an international scale, such as the Pathé and Gaumont companies in France, and Edison and Biograph in the US. The only

[50] See, for example, Allen (1980).

exception was British Mutoscope and Biograph, which quickly established an international network. In 1898 and 1899 it organised a series of public flotations which totalled £1 million in nominal capital. The company, however, was a spin-off of the American mother and focused more on slot machines in amusement halls. It had already disappeared when the First World War broke out.[51]

Britain did have many smaller enterprises that often were highly profitable, especially in the early years. Robert Paul, who manufactured copies of Edison's machines and also sold films and operated a film studio, made a return on investment of 1,200 per cent in his first year of trading.[52] The Warwick Trading Company saw its sales increase from about £15,000 in 1898 to about £45,000 in 1901, an average annual growth of 43 per cent.[53] He claimed to supply over 600 exhibitors and 3,000 private customers.[54]

The periodisation for Britain is roughly the same as for the US and for France. The period from the 1870s to 1895 was the era of experiments and visual gadgets. Then followed the first years of cinema, which lasted from 1895 to 1898/99, when films were a special product shown in theatres and on special occasions. From then on until the first cinemas, films were shown through two main channels: as part of the program in music hall or as a special theatrical event; or by travelling showmen, who travelled the provinces and stayed in every town and village on their route for as long as they kept making money.[55]

The first fixed cinemas emerged in 1906. These were small places, often in an illegal penny gaff, or in small converted East End theatres.[56] The first West End theatre was founded in 1906.[57] In the same year, Hale's Tours also opened a venue in London, on Oxford Street.[58] London landlords were reported to mark up their rents by about 50 per cent if tenants wanted to open a cinema, claiming increased fire risk.[59] However, the impression is that a construction boom similar to that in the US did not take place. Although many small penny/store-front theatres were opened, cinema construction remained relatively limited until 1909. In that year, the Cinematograph Act was introduced which regulated licences for cinemas, and made it easier to obtain them, if standards, especially fire regulations, were met. Thus construction finally surged.[60] The number of penny/shop-front cinemas alone increased by 65 per cent in London during 1909 and 77 per cent the

[51] Brown and Anthony (1999). [52] Brown (2004).
[53] Or 56 per cent annually between 1898 and 1900 and 21 per cent in the last year.
[54] *Ibid.* [55] Low and Manvell (1948).
[56] Burrows (2004); Weightman (1992: 41–2). [57] *Ibid.*
[58] Jowett (1974). [59] Burrows (2004: 70). [60] Low and Manvell (1948).

following year.[61] In addition, many larger, more theatre-like cinemas were built. The registrations of exhibition companies at the Chamber of Commerce went from 3 with a total capital of £110,000 in 1908 to 103 with a capital of £1,451,824 in 1909.[62] By 1914, 1,833 exhibition companies were registered, with a total capital of £11,304,500, including 109 circuits, representing 15–20 per cent of all cinemas.[63] This constituted a phenomenal real capital growth of 49 per cent per year, while the average amount of capital per firm more than halved, from £14,000 to £6,000.

By 1911, London counted 94 cinemas, with a total of 55,000 seats, and an average of around 600 seats. This was a huge number, especially when compared with the theatres and music halls, which had already been around freely for over half a century: in the same year London counted 54 theatres and 50 music halls, with 140,000 seats in total.[64] In no more than five years, cinema had reached 40 per cent of the production capacity of the major existing live entertainment in the city. This was in the same ballpark as in the US a few years earlier, where in Boston in 1909 cinemas accounted for 52 per cent of all 'selling capacity', though only 15 per cent of all revenues.[65]

Figure 5.1 shows the total length of negatives released in Britain during the 1910s, including British as well as foreign films. From 1909 to 1914 a strong growth in released length took place, for the most part due to more films being released, and for a smaller part due to the gradual increase in average film length. Then, between 1914 and 1919, a war dip took place, and total released length dived, while the average length of films jumped.[66] The changes in released length differs from the changes in consumer expenditure on entertainment as estimated by A. R. Prest.[67] While the figures of Prest show a boom in 1915, a trough in 1917 and 1918, and a recovery in 1919, released length suggests a decline from 1914 to 1916. Nevertheless, both time series confirm that market size in Britain did not increase as dramatically in the years 1915–1920 as it did in the US.

[61] Burrows (2004: 83).
[62] Low (1949).
[63] Chanan (1996: 213).
[64] See table 2.2 in Chapter 2.
[65] See the Boston study in Chapter 4. Seating capacity was not fully comparable with 'selling capacity', as the latter took account of the number of showings per day and per week.
[66] These fewer, substantially longer, pictures signalled the emergence of the feature film. From each negative, probably an increasing number of prints was made. Released negative length became less and less a proxy of market size, as the average number of prints per negative increased and started to vary more, resulting in flops and hits (see Chapter 6).
[67] Prest (1954); see Chapter 3.

In the 1920s, total released length, the number of films, and average length more or less stabilised. By that time the feature film had become the uncontested standard of the industry. Apart from the war dip, the above pattern concurs with the pattern observed for the US. Unfortunately, data for the period 1895–1909 for Britain are missing, exactly the period in which the total released length probably increased most, and in which the birth of an industry could have been observed.

The demand elasticity of industry age looked similar to that in the US for the years from 1909 to 1914, suggesting that it might also have been the same in earlier years. From 1914 onwards, however, the elasticity stagnate and it does not appear to catch up after the war.

The periodisation for Britain is about the same as for the US. Cinema technology appeared from the 1890s onwards, and the film industry took off between 1905 and 1910 in both countries.

France

France played an important role in the process of invention and innovation. The experiments of Marey in the 1870s and 1880s laid the foundation for cinema technology, and the Lumière brothers introduced film projection.[68] Innovation in cinema was especially concentrated in the chemical industry, such as the photography and chemical business of the Lumières in Lyon, and in the fine machinery industry, out of which the companies of Pathé and Gaumont emerged.[69] Compared to the US and Britain, the French film companies had a stronger base in technology. In the US, Edison was the main technology-focused company that moved into the film business. It quickly met competition from other companies that focused more on marketing and making films than on technology, although they needed access to technology to keep standing during the legal quagmire of patent lawsuits in the 1900s. Pathé, which held more than half of the French market before the First World War, had huge factories that turned out cameras, projectors, accessories and raw and exposed film stock. Gaumont, the second largest French film company and a third the size of Pathé, had a similar base in technology, although it did not manufacture raw film stock.

The number of patents filed on cinema technology in France grew considerably between 1895 and 1911. After the six Lumière patents filed in 1895, a boom in patents followed the next year, after which the total number of patents grew gradually until 1905. From 1906 onwards, as fixed cinemas emerged, technological activity increased and the number

[68] Michaelis (1980); König and Weber (1990). [69] Guy Fihman (1997).

of patents started to grow more rapidly.[70] Fixed cinemas induced companies to develop more new technologies, such as sound systems and the synchronisation of sound and image, colouring methods, ways to show three-dimensional images, and projection in a lit theatre.[71] Over the whole period, 834 patents in total were filed, including filings in France by foreign companies.

The periodisation for France is similar to that for the US and for Britain. The period from the 1870s to 1895 was the era of experiments and visual gadgets, followed by the first years of cinema. A pioneering study by Jacques and Chantal Rittaud-Huttinet systematically investigated 520 Paris and provincial newspapers to gain an insight into the diffusion of the cinematograph in France in 1896 and 1897.[72] Their research team identified 156 showmen using the cinematograph, making 244 visits covering 235 towns, with inhabitants varying from 2,000 to 2.5 million for Paris.[73] These 244 'passages' were probably only a small part of all the cinematograph visits that took place to towns and villages. It is likely that in many smaller places the visit was not advertised in newspapers, as could be the case when a showman did not plan far in advance. Also, several cinematographs were part of travelling fairs and were not separately advertised.

The 156 travelling showmen used no less than 87 different names for the cinematograph, although the simple 'cinematographe' was the most common. The number of different brands was actually far smaller; most showmen simply invented fantastic names.[74] The spread of the cinematograph was not confined to France; it was international from the start. In the late 1890s, the Lumière brothers had 84 affiliated operators world-wide who were equipped with a Lumière cinematograph. They operated not only in neighbouring countries such as Italy and Spain, but also in far-away countries, such as Chile, Russia and Japan.[75]

As in the US, the first fixed cinemas emerged in France between 1905 and 1907, and in 1906 and 1907 a boom in cinema construction took place. Several film producers and distributors, such as Pathé and Gaumont, started to build their own national cinema circuits. In 1909, Paris counted 100 cinemas, 20 of which were owned by Pathé.[76] Between 1911 and 1913, the number of Paris cinemas increased at

[70] Time series from 'Le progès de la cinématographie', in *Le Cinéma*, 1 March 1912, 1, as quoted in Bakker (2001b).
[71] *Ibid.* [72] Rittaud-Hutinet and Rittaud-Hutinet (1999: 595–608).
[73] Calculated from *Ibid.*: 583–6. For 116 showmen only one visit was located; 25 had two visits; 4 had three visits; 4, four; 3, five; 2, seven; 1 eight, and 1 thirteen.
[74] *Ibid.*: 579–81. [75] Calculated from Rittaud-Hutinet (1985: 228–39).
[76] Abel (1994: 25, 30).

about forty cinemas a year.[77] In 1911, 3 million cinema tickets were sold in Paris, about the same as the number of music hall tickets. Most cinemas offered a two-hour program with a wide variety of films, somewhat comparable in time and variety to the music hall programs. The average price for the music hall was about four times the average price for a cinema program in Paris.[78]

The total negative length released in France grew rapidly until 1914, with a decline in only 1903 (figure 5.1). Growth rates and age elasticity of demand were similar to those in the US. Between 1908 and 1914, growth averaged 10.6 per cent a year. This growth was a combination of a more moderate rise in the number of films and the average film length. During the war, the total negative length released dipped and then rebounded from 1917 onwards, just as in the US market, as the feature film emerged. After the war, it is likely that the number of prints circulated per negative, and thus the number of spectator-hours produced by each negative, increased rapidly. The age elasticity of output showed the same pattern as in Britain: sharp growth until 1914, decline and substantial fluctuations thereafter.

An investment boom in film companies took place during the late 1900s. From the end of 1906, many existing firms floated on the stock market. Gaumont was floated in January 1907, with a capitalisation of 2.5 million francs, 2.5 times its original capital. Pathé, which had already been listed for many years, saw its market value almost double each year between 1904 and 1907, making a sevenfold increase in total over that period.[79]

The unfolding value chain

The value chain enables the analysis of the production process, of the emergence of specific stages as distinct steps and of changes over time. The value chain can be separated into the providers of finance; the makers of the technological equipment such as cameras, projectors and film stock; the suppliers of materials for film production; the creative and technical inputs used in film production; film production itself; the printing of film positives; the distribution of positives; and the exhibition of films and the film consumers (figure 5.3).

When film technology was adopted in the 1890s, generally all activities, except for finance and consumption, and sometimes exhibition, were done inside one firm. The Lumière Brothers, for example, financed

[77] *Ibid.*: 54. [78] *Ibid.*: 54–5. [79] Meusy (2002).

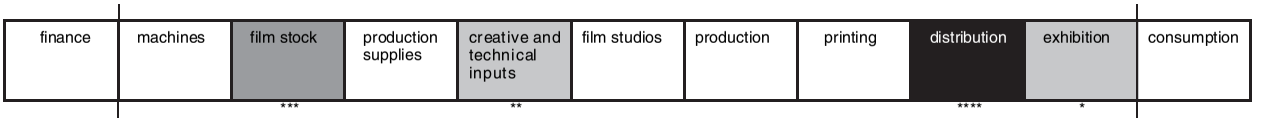

Figure 5.3 The value chain in the motion picture industry

Note: The grey-scale and the number of stars shows the strength of the ability to capture the rents from the value chain. It denotes both the strength at cross-sections and the relative permanence of the strength. This strength depends for a large part on asset-specificity (Williamson 1985). Distribution, for example, had little ability to capture rents in the early film industry, but became more and more important from the late 1990s, while for film stock the reverse happened. Today, distribution remains the most important value-capturing activity. Only the creative inputs and exhibitors have also retained some strength to capture value.

the development of their camera and projector from their photography business, made the machines and film stock themselves, did their own film productions, printed positives, organised exhibitions, and sent operators abroad with a camera-projector and a supply of films. Other companies did the same, but often sold their equipment and films to independent exhibitors.

Quite soon after the emergence of film technology the equipment makers started to sell their equipment to other entrepreneurs and firms, at the same time keeping an important film production business themselves. Examples of this are Edison, Pathé and Gaumont. Soon exhibition also became an independent business. From the mid-1900s film production also became more and more independent, and the first film exchanges emerged. In the US from as early as the 1890s, Eastman-Kodak specialised in making raw film stock and virtually monopolised that part of the business.

Nevertheless, the question of whether a job was done inside one firm or not may not be the most interesting. At most times, there always existed some firms that integrated nearly all the activities inside their firm, and there always were examples of firms that specialised in a specific activity, limiting the scope of generalisations. Far more relevant is the question of who was best able to capture the Schumpeterian rents within the industry. It is assumed that cinema technology was adopted because somehow it allowed the industry to make supernormal profits and thus to capture rents. If all of the value was captured by consumers in the form of lower prices, the technology would probably not have been developed. However, given that the industry did capture a substantial part of those rents, the question remains as to who in the industry did this best.

From the moment cinema technology was adopted, the inventors and innovators seemed to capture most of the rents because of patents on their cameras and projectors, their technical know-how and their committed production capacity to produce the equipment, which could deter new entrants to the extent that the investments were sunk. Paradoxically, while many accounts of the industry history relate the patent battles between various equipment firms and producers – such as Edison, Biograph, Pathé and Gaumont – film-stock maker Eastman-Kodak was probably in the best position to capture the rents of the early industry, as in the US it was nearly a monopolist in supplying raw film stock in this period, and also in Europe it met very little competition. Eastman-Kodak's position was partly based on patents, but to the largest extent on production know-how and trade secrets, and on the enormous capacity of its factories, which deterred new entrants. Eastman's main

competitor was the German firm Agfa, and later, from the late 1900s, Pathé.

After fixed cinemas emerged, film distribution increasingly became the activity that was able to capture most of the rents, as both producers and cinemas needed a distributor, and efficient national distribution organisations had large set-up costs. During 1909 and 1910 the Motion Pictures Patents Company tried to monopolise distribution by buying up film exchanges. From 1914 onwards, several companies, such as Mutual, Pathé, Universal and Fox, started their own US-wide distribution organisations.

It is probable that those steps in the value chain that were most asset-specific were best able to capture the rents. Machines, film stock and distribution were all very much asset-specific. Machine-makers quickly became abundant, however, and after Kodak got competition from Agfa, Pathé, DuPont and others, film-stock supply became also more competitive. In distribution, however, although it was seemingly easy to enter, and many distribution firms existed, only a few companies were able to provide fast and efficient national distribution with guaranteed access to the best screen-time in the best locations. In the long run, owners of national distribution systems were therefore best able to capture the rents in the film industry. From the late 1910s, distribution also integrated with the ownership of the best cinemas in the best city centre locations.[80]

In economic terms, films were giant machines that produced viewings. Film producers made the first negative, and after that a large, potentially infinite, number of positives could be printed, each of which could be used for a large number of shows to generate a large number of viewings by individual consumers. Films could thus be considered capital goods, and producers hoped that spending more on making a film would result in generating more viewings. In accounting terms, generally film production expenditure had to be written off in the year it was incurred, even though one could consider it capital expenditure, as the money was used to create a capital good. The resulting complete film negative could be put as an asset on a company's books. During the 1920s, however, it was generally written off in eighteen months.

Conclusion

This chapter has investigated the motion picture industry as a whole and how its emergence related to live entertainment. The chapter pinpointed

[80] See the next chapter.

a substantial lag between the availability of cinema technology and its take-off. This may have been caused both by rising demand that only gradually led to bottlenecks in live entertainment provision and by the time needed for entrepreneurs to discover how the innovations could be best applied and further developed.[81] The chapter also noted how cinema continued developments that originated in the live entertainment industry to increase productivity by increasing the number of spectator-hours that inputs could deliver and by standardising output quality. The key new dimension that cinema brought to live entertainment was to make entertainment a tradeable product. Films were giant machines that produced spectator-hours when used in a theatrical venue. Unlike the live entertainment productions before, these machines could be infinitely reproduced and traded on the international market. Intellectual property rights prevented their price approaching zero, and eventually entrepreneurs created new machines continuously in a partially routinised process, involving massive sunk outlays.

Making use of the industry-age elasticity of demand, quantitative analysis of the released negative length, which was used as a lower-bound proxy for market size, showed that in the US the industry took off in 1907, which is not inconsistent with qualitative film history literature. The number of cinema seats showed a lower age elasticity of demand than length, but this measure excludes seats in venues that showed both films and stand-alone live entertainment. The reasons for the industry's take-off at exactly this moment are unclear. A major factor was probably the increasing demand for entertainment, but this cannot be investigated in the short run, as time series for the early years are lacking.

Two different stories, then, can be told about the emergence of the film industry. The most popular one so far has been the story about great men, genial inventors who step by step invented all the necessary components for film technology, starting with projection in the 1850s, celluloid in the 1860s, roll films in the 1880s, and finally the cinematograph in 1895. The heroes of this story were men such as George Eastman, Georges Marey, Louis Lumière, Thomas Edison, William Kennedy Dickson, Robert Paul, Friese Green and Albert E. Smith.[82] According to this story, these great men with their great inventions laid

[81] On the entrepreneurial discovery process see Kirzner (1985, 1973).

[82] One of the few female entrepreneurs mentioned in the literature is Alice Guy, a former secretary who became film director at Gaumont and then left for New Jersey to help set up its American business (Guy 1976). Many more female inventors and entrepreneurs may have existed that have been left out of the currently available film histories. Davis (2000), for example, finds a significant presence of female entrepreneurs in the British theatre industry.

the foundation of the modern twentieth-century film industry, and on their shoulders stood great men, great entrepreneurs that quickly marketed their innovations to the world, men such as Charles Pathé, Léon Gaumont, Charles Urban, William Fox and Carl Laemmle.

Another story can be told as well. A story about a great wave of liberalisations inside great emerging democracies, of deregulated entertainment markets rapidly integrating into national markets, of large organisations integrating production, distribution and retail, increasing productivity and output of live entertainment to unprecedented heights, of bursting demand, fuelled by increased income and leisure time, and concentrated spatially by urbanisation. When this great wave of deregulation, market integration and innovation had reached its limit, productivity could not be increased as easily again. At that moment, motion pictures emerged to set off a new wave of innovation and market integration, this time on a world-wide scale, eventually leading to an internationally concentrated entertainment industry.

In this second story, the great inventors were just ripples on great waves, and while their great invention collectively may have contributed significantly to scientific knowledge, it hardly contributed to the take-off of the film industry. Their invention might have stayed a mere gadget, a visual toy and a novelty, as was the fate of its predecessors in the nineteenth century. It might have remained a premium product for a limited elite, as was the fate of its major fellow traveller, the phonograph. It might have been a fad for a short spell, such as the skating rinks and bowling alleys of the 1900s. Instead, it broke out of the control of its great inventors, and during the First World War quickly developed into the greatest entertainment industry of all, ultimately concentrating itself inside the largest entertainment market, the United States. The next chapter will examine how this came about.

6 The quality race

> You can take Hollywood for granted like I did, or you can dismiss it with the contempt we reserve for what we don't understand. It can be understood too, but only dimly and in flashes. Not half a dozen men have ever been able to keep the whole equation of pictures in their heads. F. Scott Fitzgerald, *The Last Tycoon*

In the years immediately after the take-off of cinema, European film companies produced the great majority of the films shown in Europe.[1] In some years, they also supplied most of the films shown in the US. Innovations such as the newsreel and the feature film had their origins in Europe, but realised their largest profits on the American market. After the First World War, however, the situation was the reverse: the emerging Hollywood studios now supplied the majority of films shown in Europe. Only a few European films were distributed in the US. This situation has lasted until the present day. Never since have European film producers or distributors managed to obtain a lasting presence in the US.

In the space of just a few years, the European film industry experienced a remarkable transformation from economic dominance to insignificance. This chapter will examine what may have caused this collective downfall of the European film companies during such a brief period. It will draw on industrial organisation theory, most notably the work of John Sutton on sunk cost, technology and market structure.[2] The hypothesis examined here is that, as the market grew, some film companies escalated their outlays on film production costs. As these sunk costs increased, market size mattered more and European film companies found themselves increasingly at a disadvantage. For several reasons, to be investigated and explained below, they were unable to take part in the 'quality race', the jump in expenditure on film production and promotion that took place in the 1910s in the US, and were left behind forever.

Economists often implicitly assume that the film industry has always been concentrated in Hollywood, or at best take the shift for granted.

[1] Parts of this chapter are based on Bakker (2003b, 2005a).
[2] Sutton (1991, 1998).

Their focus is on explaining why the international film industry is presently located in Hollywood, quoting increasing returns and network externalities, often exclusively focusing on geographical rather than industrial concentration.[3] This chapter examines the film industry in the one period in which American film companies did *not* control their home and world markets and studies the subsequent change. Both the reasons for the shift itself during the 1910s and for the quasi-irreversibility are examined.

Few industries have experienced such an extreme shift in both industrial and geographical concentration. Since complete and wholly reliable data are lacking for the early film industry, this chapter aims to do no more than show convincingly that sunk costs can explain the decline of the European film industry better than alternative explanations. Limitations of the data prevent the making of any stronger claim.

The quality race examined in this chapter is directly related to the structure and evolution of consumer tastes and demand explored in the last two chapters of Part I, which showed rapidly increasing demand and potentially disproportional rewards to entrepreneurs who could provide entertainment at lower cost, higher quality, or both. The quality race was also dependent on the industrialisation process characterised in Part I. Cinema technology standardised spectator entertainment, automated it and made it tradeable. It is the last aspect, a fundamental qualitative change, which was essential to the quality race. Without entertainment being tradeable, the escalation of quality would have been limited far more by the technological structure of entertainment production. Tradeability potentially increased the rewards of quality improvements, but the particular industry structure, the structure and evolution of consumer tastes and the entrepreneurial discovery process would determine if, how and when these potential rewards were realised.

The chapter first describes the European film industry's decline and existing explanations. Then theory on sunk costs will be used to analyse time series data on film production costs and market structure, and to show how this led to the European decline. The next chapter will investigate why the European film industry could not catch up after its decline.

From dominance to decline

In the 1900s the European film industry was in good shape. European film companies pioneered both technological innovations such as projection, colour processes and sound films, and content innovations such

[3] See the next section.

as the weekly newsreel, the cartoon, the serial and the feature film. They held a large share of the US market, which at times reached 60 per cent. The French film companies were quick in setting up foreign production and distribution subsidiaries in European countries and the US, and dominated international film distribution before the mid-1910s. The pioneer Méliès and the three largest French companies – Pathé, Gaumont and Éclair – all set up US production subsidiaries. The large Danish Nordisk company pioneered films crafted like theatre plays, the forerunners to the feature film.[4] A number of smaller Italian companies were also important. In the early 1910s, they introduced the long historical spectacle film, another predecessor to the feature film.

By the early 1920s, all this had changed. The European film industry only held a marginal share of the US market, and a small share of its home markets. Most large European companies sold their foreign subsidiaries and exited from film production at home, while the emerging Hollywood studios built their foreign distribution networks. The main puzzle of this chapter is how this could happen in such a short period of time.

In figure 6.1, the evolution of market shares in the US and European markets is mapped. From 1895 onwards, as they adopted the Lumière technology, the European firms' share of the US market increased sharply, until in 1903 it reached about 50 per cent of released negatives, where it stayed until 1910, after which it dropped substantially to roughly 20 per cent, and remained so until the war. The drop coincided with the formation of the Motion Picture Patents Company (MPPC), a trust led by Edison to dominate the US film market. It tried to monopolise distribution by forming the General Film Company (GFC), which forced exchanges to sell out or lose their licence.[5] Of the eight members, only one, Pathé, was European. Other European companies had to supply through trust members or through the independent companies that soon emerged to defy the trust. By 1912, the trust's power had declined, as it could not eliminate the independents, and the US Department of Justice had started prosecution, eventually leading to the liquidation of the trust.[6]

During the First World War, the European market share made a final fall, to about 5 per cent, and has not bounced back since. Measured in absolute terms, the European footage released was the same in 1919 as

[4] Mottram (1988).
[5] By early 1916, when the GFC's near-monopoly was over and it became more marginal by the day, the average return on its preferred stock was 13 per cent, calculated from the issue in 1910 (Davis 1916: 71–3, 164).
[6] Cassady (1959).

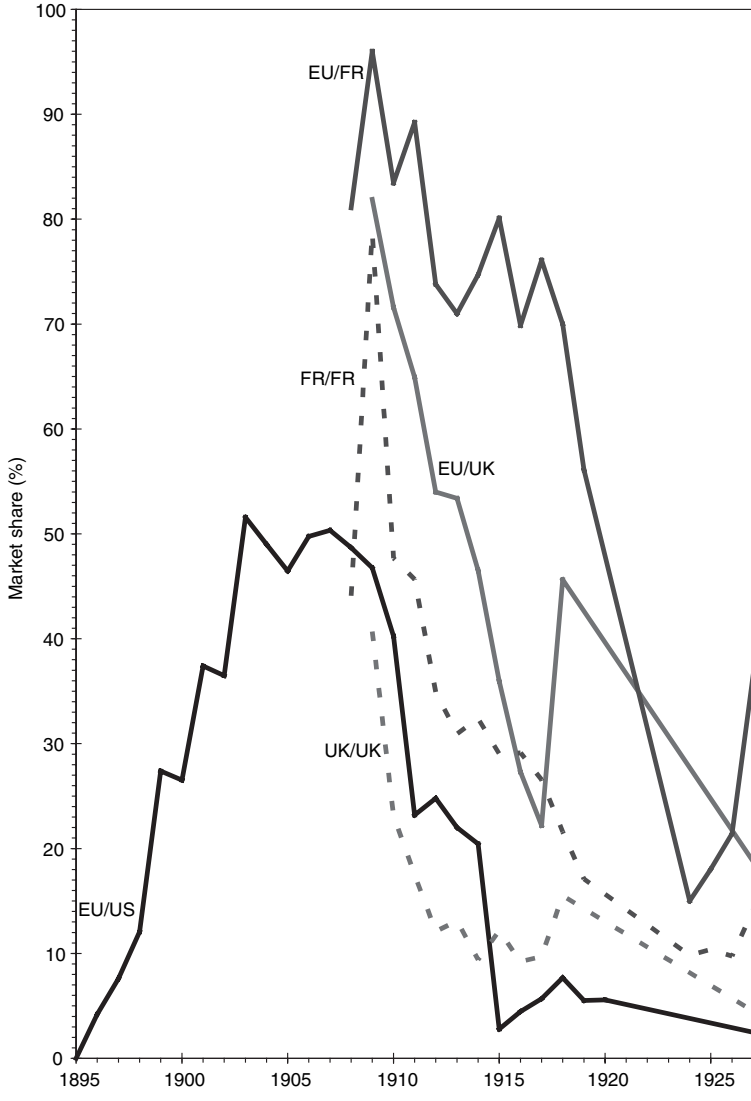

Figure 6.1 Market shares of national film industries, US, Britain, France, 1893–1930

Note: EU/US is the share of European companies on the US market, EU/UK is the share of European companies on the British market, and so on.
US: 1895–1906: market share in number of films.
1907–1910: market share average of number of films and released negative length.
1911–: market share in released negative length.
UK: 1909–: market share in released negative length.
France: 1908–1923: market share in released negative length.
1924– : market share in number of films.
Source: Bakker (2005a).

in 1914, but the US market had grown so rapidly that what constituted still a substantial share in 1914 amounted to only a marginal part five years later.[7] That the European film industry declined because of marginalisation and not because of some absolute fall in production, is important for the theory put forward below.

The British and French industries' shares of their home markets decreased in the same pattern, albeit that the French domestic market share was higher than the British one and fluctuated more. The broadly similar direction of changes suggests that film technology integrated national entertainment markets, by automating entertainment, standardising it and making it tradeable.[8] This market integration affected the escalation parameter discussed in the next section.

Several explanations have been put forward for the sharp decline of the European market share. A major candidate is the First World War, which, by reducing the European home markets, allegedly deprived European companies of necessary revenues.[9] A problem of timing exists, because the European market share in the US had already started to fall in 1910 (figure 6.1). Nevertheless, without the war the shift might not have been so extreme and an intermediate situation might have emerged.

Little proof exists of a sharp decline in the European home markets consistently throughout the war. Available statistics do not indicate a continuous fall, but sharp fluctuations, and on average a modest to substantial growth in real expenditure.[10] In some years demand boomed, as filmed entertainment used few raw materials and personnel, yet provided consumers with several hours of consumption and escape from the daily misery. In France, for example, entertainment expenditure fell between 1914 and 1915, because of cinema shut-down and stagnation of film production.[11] In 1915, however, entertainment expenditure started to rise sharply, lasting until 1922. By 1919, live entertainment revenue had merely recovered to pre-war levels, but cinema revenue was 2.5 times as high and accounted for nearly all growth in total entertainment expenditure.[12]

[7] Bakker (2000b). [8] Bakker (2004a). [9] Thompson (1985); Uricchio (1996).
[10] See Chapter 3. [11] Abel (1984: 9–10).
[12] See Chapter 3. Released negative length grew strongly between 1909 and 1914, but then fell until 1917, while official figures showed consumer expenditure increased substantially. Many more copies must have been printed of fewer negatives. Increasing released lengths may thus substantially underrepresent market growth. Contrary to Europe, in the US released length kept increasing all the time, which points towards a phenomenal market expansion.

The continuity of Europe's large film companies was often secure, because the government needed them for propaganda, and their hardware subsidiaries often produced war materials, such as bomb fuses. The three largest French film companies were even prosecuted for excess war profits. Likewise the Danish Nordisk company, which aggressively expanded in Germany during the war, must have made substantial profits. One would also expect neutral countries' industries to have boomed, if the war caused Europe's decline, but this seems not to have been the case. In Sweden, for example, the American market share grew substantially faster than in the allied countries, steadily increasing from 5 per cent in 1913 to 81 per cent by 1919.[13]

Although the war fundamentally hindered the European film industry in taking part in a new *growth* phase, the industry did not totally stagnate. In absolute terms, the European film industry probably kept growing, at least moderately, during the war, while in relative terms, its share of the world market was becoming smaller and smaller.[14]

That the European film industry, though obviously seriously hampered, did not totally come to a halt is also supported by the level of feature film production. Features were a new product, becoming the 'standard' during the war. While European companies could hardly make the expensive dramas their US counterparts were turning out, the war did not stop them from substantially increasing feature output (figure 6.2). Until 1917, growth of British production showed a similar trend to the US, with a one-year lag. The growth of French production initially preceded the US and showed a similar direction.

Scholars have also argued that the war cut European companies off from their overseas export markets, depriving them of essential revenues. However, films were small products, and only a small number needed to be exported to individual markets.[15] Further, non-US, non-European markets constituted at most 10 per cent of world film sales, which did not make them essential.[16] Further the non-US, non-European subsidiaries of Pathé continued trading during the war and at times made very large profits.[17] The loss of export markets was thus more a consequence than a cause of the European decline.

Another explanation could be the shifting away of American tastes from foreign films, causing European companies to lose essential US revenues. Richard Abel identified the rise of feelings against foreign films, especially those of Pathé.[18] Gaumont, a French competitor of

[13] Bjork (1995).
[14] Gomery and Staiger (1979) are also sceptical about the war as explanation.
[15] Uricchio (1996). [16] Seabury (1926). [17] Bakker (2000b). [18] Abel (1999: 136).

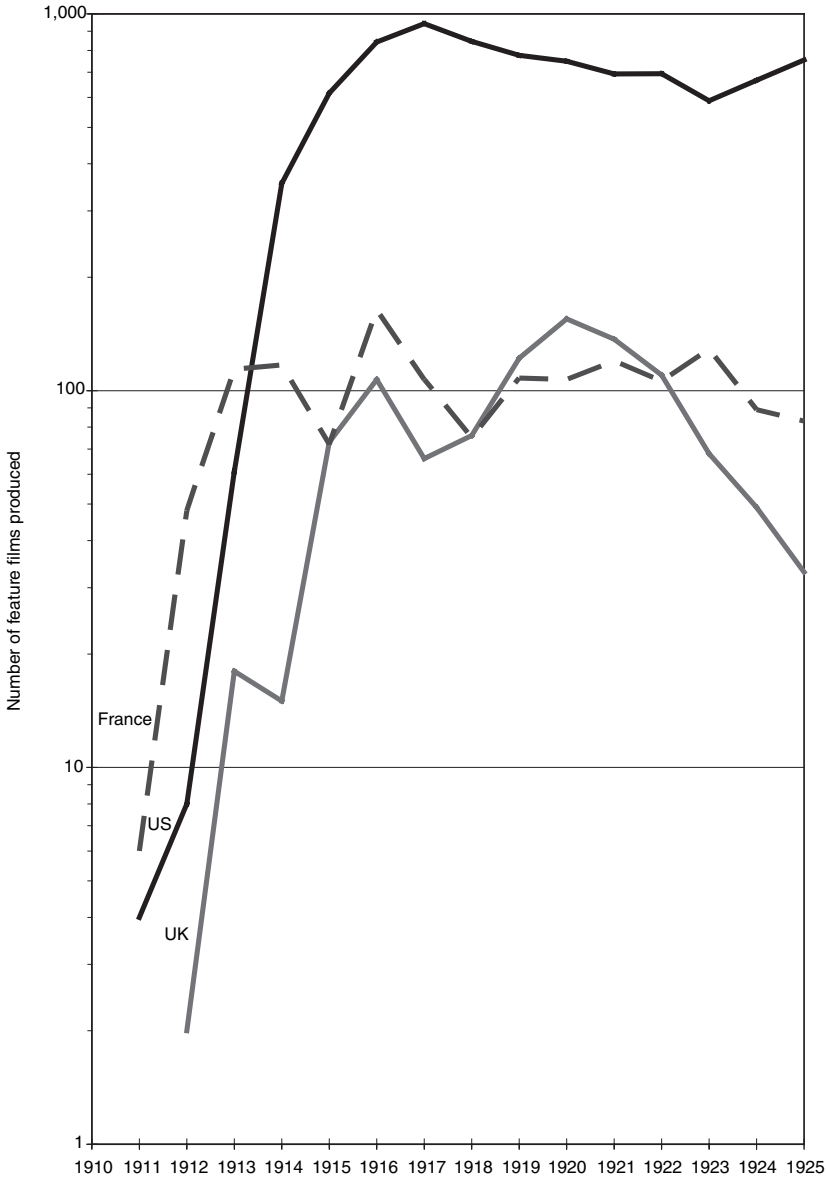

Figure 6.2 Number of feature films produced in Britain, France and the US, 1911–1925

Note: For France before 1919, feature films are the films in Goble's *World Film Index* of 800 metres or longer. In all other cases, feature films are those films considered feature films by the American Film Institute, the British Film Institute and Raymond Chirat. Generally, this means that films of three reels (c. 3,000 feet) or larger are considered feature films.
Source: American Film Institute Catalogue; British Film Institute; *Screen Digest*; Goble (1998); Chirat (1984).

Pathé, faced similar problems. In January 1914, its US manager wrote: 'There is as you know, quite some feeling against foreign film', and later 'The General Film exchanges claim that they cannot get their money out of foreign film, and that their shelves are filled with foreign film which has not earned fifty cents on the dollar.' The manager noted also that tastes shifted rapidly away from shorts towards features: 'The trade in this country is in a somewhat tumultuous condition, big features and features of a sensational nature being the only productions now in demand.'[19] Since, arguably, audience tastes always change, what mattered was the *capacity* to adapt, and European companies had no lack of that. Méliès had produced films in the US since 1902 under the name Star Films. Gaumont briefly produced films in the US in 1908 and restarted production in 1914. Pathé started US production in 1910. The Danish Nordisk film company, which exported to the US, but also supplied Eastern Europe and Russia, made happy endings for the West and sad, dramatic endings for the East.[20]

This chapter aims to show that the First World War did matter, but in a different way than previously thought: not primarily because of the disruption of European markets, but because the war prevented the European film industry from taking part in the escalation of quality.

Several economists have addressed the workings of the international film industry.[21] These works generally discuss network externalities and market size. Storper, who examined the Hollywood film industry since the 1950s, emphasises agglomeration effects and network externalities. Krugman and others stress market size and agglomeration benefits as the reason for US dominance in the film industry. These claims are certainly not incompatible with the theory in this chapter, but cannot explain the dynamics of the situation, of Hollywood's rise to dominance. In other words, the 'iron law of Hollywood dominance' is not iron and is not a law. Agglomeration benefits and externalities did play a role in the European film industry's failure to catch up, and are discussed in the next chapter. Some scholars have also applied Chandler's idea of the modern, multi-divisional business enterprise to the film industry, claiming that since Hollywood studios made the threefold investments in production, distribution and management, the Hollywood companies eventually dominated the international film industry.[22] Since European companies, especially French ones, were doing the same in the late

[19] Bakker (2001b, Chapter 5). [20] Bronlow and Gill (1998); Mottram (1988).

[21] For example, Storper (1989); Andersen and Heinrich (1994); Noam (1991) and even the textbook Krugman and Obstfeld (2003: 153).

[22] For example, Bordwell *et al.* (1985). Chandler's (1977) ideas are not fully incompatible with this chapter's findings. His notion of first movers investing simultaneously in

1900s, this cannot fully explain the eventual success of the Hollywood studios.

Sunk costs, market size and market structure

For over half a century, a major issue in economics has been to explain why some industries are dominated by just a handful of firms in almost every country in the world, i.e. to find an explanation for the existence of industrial concentration, its evolution, and the difference in market structure across industries.[23] One explanation has been increasing returns. If the minimum efficient scale of operation is large compared to the size of the market, then concentration will be higher. However, in the limit, when the size of the market increases indefinitely, firms will get an arbitrarily low market share. Moreover, in reality a firm's production capacities are often many times the minimum efficient plant size.[24] A second kind of increasing returns, network effects and learning-by-doing, does seem to affect concentration, but these turn out to constitute special cases of a more general model; they fall within the scope of the escalation mechanism discussed below.[25]

The recent literature on concentration identifies two robust mechanisms that hold across industries. The first is the toughness of price competition. If price competition becomes more severe, for example, because of new anti-trust rules or enforcement, concentration will tend to be higher. The second mechanism involves the role of fixed and sunk expenditures such as those on advertising and R&D. While in many industries the lower bound to concentration falls to zero as the market size increases, because there is 'room' for more companies to enter the market, John Sutton has shown that in some endogenous sunk costs industries concentration is bounded from below when market size tends to infinity, and does not asymptotically converge to zero, but to some other value.[26] Market growth raises profits for any *given* quality level, making room for new entrants, but also stimulating firms to raise their R&D (film production in our case) investments to improve their quality level (while the marginal cost of an increase in R&D spending is unchanged, the marginal benefit from it is now higher), leading to higher

management, manufacturing and distribution is wide and could partially describe the vertical integration process that increased Sutton's *alpha* (see below).

[23] This section is necessarily brief and sketchy. It is largely based on Sutton (2007).

[24] See, for example, Sutton (1991: 24–6).

[25] Sutton (2007; 1998: 341–414).

[26] 'Exogenous' sunk-cost industries are industries in which the cost of raising product quality are prohibitively high. They form a limiting case of the endogenous sunk-costs model discussed below (Sutton 2007).

fixed sunk costs and limiting the number of firms as the market tends to infinity.[27] Which of the two effects has the upper hand depends on the distribution of the willingness-to-pay and the shape of R&D costs associated with quality improvements.[28] This mechanism limits the degree to which a fragmented industry structure can survive: if escalation is possible, one (or more) firms can break the fragmented configuration by escalating their fixed and sunk outlays (i.e. making a quality jump).

This new approach differs from the once popular structure-conduct-performance paradigm,[29] which assumed that market structure was determined by entry barriers that were exogenous features of the underlying pattern of technology and tastes inherent to an industry (such as scale economies, advertising, R&D), and affected firms' conduct (the degree of collusion) and conduct in its turn affected performance (profitability).[30] Many studies regressed concentration on the various entry barriers. Sutton noted that some 'entry barriers', such as R&D and advertising, are in fact endogenous variables whose levels reflect the choices made by firms, and they therefore cannot constitute valid factors in explaining concentration.[31]

Sutton's bounds-approach differs in that it assumes free entry, that market structure is determined not by some entry barrier whose height is given, but by more basic features of the pattern of technology and tastes in a market. The question Sutton asks is 'not how high is the level an R&D spending entrant must undertake to establish itself, but rather what sort of configuration of market shares and R&D spending might be both viable and stable?'[32] Sutton does not use a fully specified model with unique equilibria, but a game-theoretic bounds framework that envelopes a class of more specific models and only predicts lower bounds to concentration, and not specific equilibria (the exact position of which may depend on institutional, historical, legal and other factors). This bounds-relationship between variables is poorly represented by a regression specification.

Sutton uses two specific conditions to study sunk costs and market structure: viability and stability. First, the viability condition (the 'survivor principle') assumes that each firm's final stage profit covers its

[27] Motta (1992).

[28] Motta and Polo (2003); Shaked and Sutton (1983). Potential market size and 'fixed costs' are often mentioned in studies on media industries. See, for example, Wildman and Siwek (1988); Noam and Millonzi (1993); Hoskins, McFadyen and Finn (1997) who all study television. See Chapter 9 for a fuller discussion of the workings of the international film market.

[29] Bain (1956). [30] Sutton (2007). [31] *Ibid.* [32] Sutton (1998: 490).

fixed and sunk outlays. Second, the stability condition (the 'arbitrage principle') assumes that all existing profitable opportunities are filled: one smart agent to fill each opportunity is all that is necessary for this condition to hold.[33] No situation will last in which a fragmented industry can be 'broken' by a high-spending firm. If an industry consists of a large number of small firms, then the viability condition implies that each firm's spending on R&D is small relative to the industry's sales revenue. In this setting, the returns to a high spending entrant may be large, so that the stability condition is violated. Hence a configuration in which concentration is 'too low' cannot be an equilibrium configuration.[34]

Sutton then introduces the escalation parameter *alpha*, which measures the degree to which an increase in the (perceived) quality of one product allows a firm to capture sales from rivals.[35] *Alpha* is the highest value that can be obtained of the ratio of the profits (as a share of ex-ante industry sales)[36] of such a new product over the relative cost of the quality jump (measured as a multiple of the existing highest quality).[37] According to Sutton, 'The interpretation of *alpha* hinges on the question: Can the profit of a high spending firm be diluted indefinitely by the presence of a sufficiently large number of low spending rivals?'[38] Intuitively, because of the stability condition, *alpha* is bounded by both the market share (the C_1-ratio) and by the R&D/sales ratio of the highest spending existing firm.[39]

The escalation parameter is affected by two other parameters. The first, *beta*, measures the effectiveness of R&D (or advertising) in raising technical performance (or perceived quality).[40] If *beta* is high, raising product quality is costly, and escalation will not be that feasible, so *alpha* is low. Below it will be shown that in the film industry *beta* was relatively low.

The second parameter, *sigma*, measures the strength of linkages between submarkets: how much market share can a firm that increases spending along one technological trajectory steal away from firms operating on other technological trajectories? Given the stability condition, *sigma* can be proxied by a homogeneity index (h), which is the sales revenue of the largest product category over the revenue of the whole product market.[41] If *sigma* is very high, competition will lead to

[33] Sutton (1998: 8). [34] Sutton (2007). [35] *Ibid.* [36] *Ibid.*
[37] See Sutton (1998: 68–77) and the excerpt in Bakker (2005a: 346–8) for formal details.
[38] Sutton (2007).
[39] See Sutton (1998: 68–77) and the excerpt in Bakker (2005a: 346–8).
[40] $F = k^{\beta}$; with F being R&D costs and k the times that the product quality exceeds the highest existing quality, such that $\beta \geq 1$.
[41] Scope economies are ignored here. For a discussion, see Sutton (1998).

the emergence of a single dominant trajectory so *h* will be high, and C_1 will be high also.[42] In the interwar aircraft industry, for example, a wide variety of plane types existed – such as monoplanes, biplanes, triplanes, wooden planes and metal planes – but buyers were mainly concerned with one key attribute: the cost per passenger per mile. Once a design emerged that minimised this cost (the DC3), they quickly converged on a single technological trajectory.[43] In the case of film, *sigma* depends on the likelihood that an increase in quality of a given type of film product might steal market share away from other types of film products. A low *sigma* (or homogeneity index) would mean that consumers would not have a definite preference for one type (or variety) of films over the other. It will turn out, below, that *sigma* was high: consumers would turn their back on packages of shorts (newsreels, sports, cartoons and the like) as the quality of features increased.

The escalation parameter *alpha* can change over time because of factors such as rapid market growth, market integration, changes in consumer preferences, changes in the relationship between R&D expenditure and quality increase, and changes in competition policy. In the film industry it seems that the combination of many of these factors instigated an increase in *alpha*: national and international integration of entertainment markets by making performances tradeable,[44] stricter anti-trust enforcement,[45] changing consumer preferences, and new methods of managing film production and distribution that made R&D expenditures more effective (i.e. lowered the R&D outlays necessary for a given quality increase).[46] What makes studying an emerging industry such as the film industry appealing is that we can actually observe the movement from one situation to another, drawing on time series data far more detailed than that used in most other industry studies applying the bounds approach.

Sutton's approach focuses on outcomes rather than on the optimality of the strategies that led to that outcome; it is not necessary to know about firms' strategies or the entry process. Nevertheless, adopting a bounds approach leaves considerable room for qualitative, historical and institutional factors, and this makes the approach appealing for use in

[42] Sutton (2007). [43] *Ibid.*; Sutton (1998: 415–72). [44] Bakker (2004a).

[45] Although stricter anti-trust enforcement often results in an increase in the toughness of price competition and increasing concentration (Sutton 2007), it can also lead to an increase in R&D outlays. The MPPC, for example, artificially kept quality at low levels (see below).

[46] Lamoreaux and Sokoloff (1999) show that between 1900 and 1950 US firms gradually developed effective ways to manage R&D in-house.

economic history. Sutton's industry history case studies often include both qualitative and quantitative aspects to test the theory.

The bounds approach moves from fully specified single industry models to weaker but robust models that hold across industries. In doing this, the approach envelopes/bounds many potential industry-specific models. In adopting the bounds approach, this chapter tries to explain the evolution of the film industry by using a general model that holds across many industries, rather than to develop and fine-tune a specific, fully specified industry model that predicts unique equilibria – and would be of little use outside the domain of this specific case.

The film industry has two important characteristics with respect to Sutton's model. First, outlays on film production and advertising can be regarded as endogenous sunk costs: they must be made to enter the market, cannot be recovered, and their level can be chosen: they can be minimal or colossal. Second, film production has an R&D character because costs are incurred once, films can be sold/rented internationally, and are protected against imitation by copyright law. Film production and distribution also have an advertising character because several production factors – mainly the film stars and the literary work on which the film is based – have a function similar to that of brand names in advertising-intensive industries.[47] The popularity of these brand names can be influenced nationally by advertising.

To establish whether the theory on sunk costs can explain the evolution of the film industry, the observables can be studied: as market size grows, concentration is expected to bound away from zero, while simultaneously the R&D/sales ratio of 'escalators' increases. Likewise, concentration is expected to increase with *h*. Indications of *alpha* can be obtained by C_1 and the R&D/sales ratio of the highest spending firm. *Sigma* can be proxied by *h*. Further, particularly good data allow a rough approximation of the value of *beta*, something which Sutton himself did not do.

On a qualitative level, film history literature discusses how the feature film became the standard during the mid-1910s.[48] Before, cinema-goers saw a succession of many different films, each between one and fifteen minutes, of varying genres such as cartoons, newsreels, comedies, travelogues, sports films, 'gymnastics' pictures and dramas. After, going to the cinema meant watching a feature film, a heavily promoted dramatic film with the length of a theatre play based on a famous story and featuring famous stars. Shorts only remained as side dishes. This clearly indicates an increasing index of homogeneity, and thus a high *sigma*.

[47] Sutton (1991, 1998); Bakker (2001a). [48] For example, Cook (1990).

Film history texts also discuss how companies spent enormous sums on exclusive contracts with famous stars, on rights to novels and theatre plays and on special effects and elaborate sets and scenery.[49]

It is expected then, that before the feature film the relationship between concentration and market size followed the 'traditional' pattern, with the lower bound to concentration decreasing as the market grew. The feature film constituted an escalation of sunk costs in a jump rather than a gradual increase, and broke the previous relationship between market size and concentration: concentration was bounded from below as market size increased rapidly. Only a few companies emerged out of this escalation phase as market leaders and have dominated the international film industry ever since. None of them was European. European companies, while largely profitable, could not participate in the escalation and thus lost out.

The sunk-costs explanation does not directly compete with the other explanations, but is simply more complete, more convincing and has more explanatory power. The First World War, for example, was important for the decline of the European film industry, but in a different way than has been previously supposed. Also, audience tastes were important, but more as a consequence of the escalators being exclusively American than as a cause of the decline of the European film industry. In other words, the sunk-costs explanation more or less encompasses the other explanations. This is consistent with Sutton's explicit aim to use an approach that has weak but robust implications that hold across industries and includes more industry-specific models.

The increase in sunk costs

The purpose of this section is to demonstrate that sunk costs did increase sharply in the film industry and that the increase was mostly of an endogenous character. It will also investigate the timing of the increase, the way in which costs increased, and it will measure the R&D/sales ratios, which are important in the sunk-costs theory framework.

Specific data on sunk costs in the early US film industry are sparse. From the mid-1900s, film production costs rose gradually. In 1909, they figured between $550 and $1,100.[50] Films were sold by the foot, and differences between production costs of films were moderate. Film lengths were short, and in the early 1910s, they converged to a standard

[49] See Chapter 8.
[50] All figures in 1927 dollars. Allen (1980: 219); Hampton (1931: 211).

of about 1,000 feet, which equalled one reel (about fifteen minutes). After 1911, one-reelers were sometimes varied with two-reelers. Then, between 1913 and 1918, some companies sharply increased their outlays on film production, making feature films (initially three to five reels), featuring 'famous players in famous plays', as Paramount advertised them.

The question then is, how exactly the increase in outlays on sunk costs took place. Costs increased across five paths: outlays on individual films, on portfolios of films, on sales promotion, on R&D-capacity (studio complexes), and on national distribution networks. The first three were sunk costs, the last two mainly fixed costs.[51] The companies that started escalating their sunk costs basically started along all those five paths, although the latter two, especially distribution, initially were also done through long-term contracts rather than bringing the activity inside the firm.

The increase in outlays on films and film portfolios could take place in four ways: increases in the quantity of inputs used, in input prices, in set-up costs, and in larger unit sizes (longer films). The last reason only mattered to a certain, restricted degree; even if corrected for the increase in length, feature films were several times more expensive to produce than other films. Increase in input quantities reflected the need for more specialists, such as several cameramen instead of one, lighting experts, make-up artists, writers, more extras for mass scenes, more actors, the need for special sets, more materials, and more special effects inputs. Also, the quantity of advertising was sharply increased. Increases in input prices consisted of large rises in players' pay, increases in directors' pay, but also more moderate but substantial increases in the pay of the highly specialised technical craftsmen. Set-up costs increased because of the need for large studio complexes and nationwide distribution organisations.

Although information on the exact breakdown of film production costs are more difficult to trace than data on total costs, available figures suggest that by the 1920s and 1930s, a large part of the total film budget was spent on creative inputs; the total share of the budget spent on players, the director and the story was on average about 30–40 per cent, and for high-budget films even higher. The creative inputs were human capital in the most literal sense of the word: by the 1920s the major studios had their stars under long-term contract and could partially capture their rents, giving them a return on their investment. Sparse data

[51] The last two had a residual value and their operating costs were incurred periodically and could be avoided.

for Britain and France indicate that in those countries, outlays on creative inputs were 20–30 per cent, while film budgets were substantially smaller, which suggests that a large part of the increase in American film budgets was due to outlays on intangible items such as creative inputs.[52]

This was also noticed by industry observer and investor Benjamin B. Hampton when he discussed the increase in film production costs during the 1910s.

> The matter of wage increase was bound up with an indefinable demand for better and better pictures that seemed to have no ending. Better stories were wanted, and this meant more money for plays, novels and continuities and scenarios. Better sets, better dressing of stages and more expensive costumes; fewer pictures per star unit per year. In every section of production, manufacturers could see expenses mounting higher and higher. Negatives that had been costing $10,000 to $30,000 were now requiring outlays of $30,000 to $75,000, rising to $100,000 or $125,000 if they included first-rank stars.[53]

Most of the established producers and distributors, and the few financiers who had become interested in the industry, did not believe that such expensive pictures could earn a profit. They were convinced that movie commerce had been pushed to the limit in the short time since features came in, and they saw little possibility of extending its boundaries for several years to come.[54]

Besides outlays on inputs, sunk costs were also incurred to perfect the technical quality of films. Although it is difficult to get an insight into the magnitude of this increase, some properties, which can be identified on film negatives, such as the number of shots, set-ups and inter-titles may serve as indicators for the increase in these costs. As shown in figure 6.3, for selected films of just one company, the American Film Manufacturing Company, the number of different shots per film increased from 14 in 1911 to over 400 by 1918, while the number of set-ups increased from 7 to 230, and the number of inter-titles from 5 to 177. If these indicators are averaged and used as a proxy for the 'technical expenditure' on film making, these outlays must have increased over thirty times in real terms between 1911 and 1918. This is probably no more than a lower bound, as pay for the craftsmen probably increased too. It reflects the costs necessary to make an average unit size; however, even if the cost increase is corrected for the increase in average unit size (from 0.84 to 4.77 reels), these types of costs would still have more than quintupled between 1911 and 1918. These data show a somewhat

[52] Bakker (2001a). [53] Hampton (1931). [54] Hampton (1931: 168).

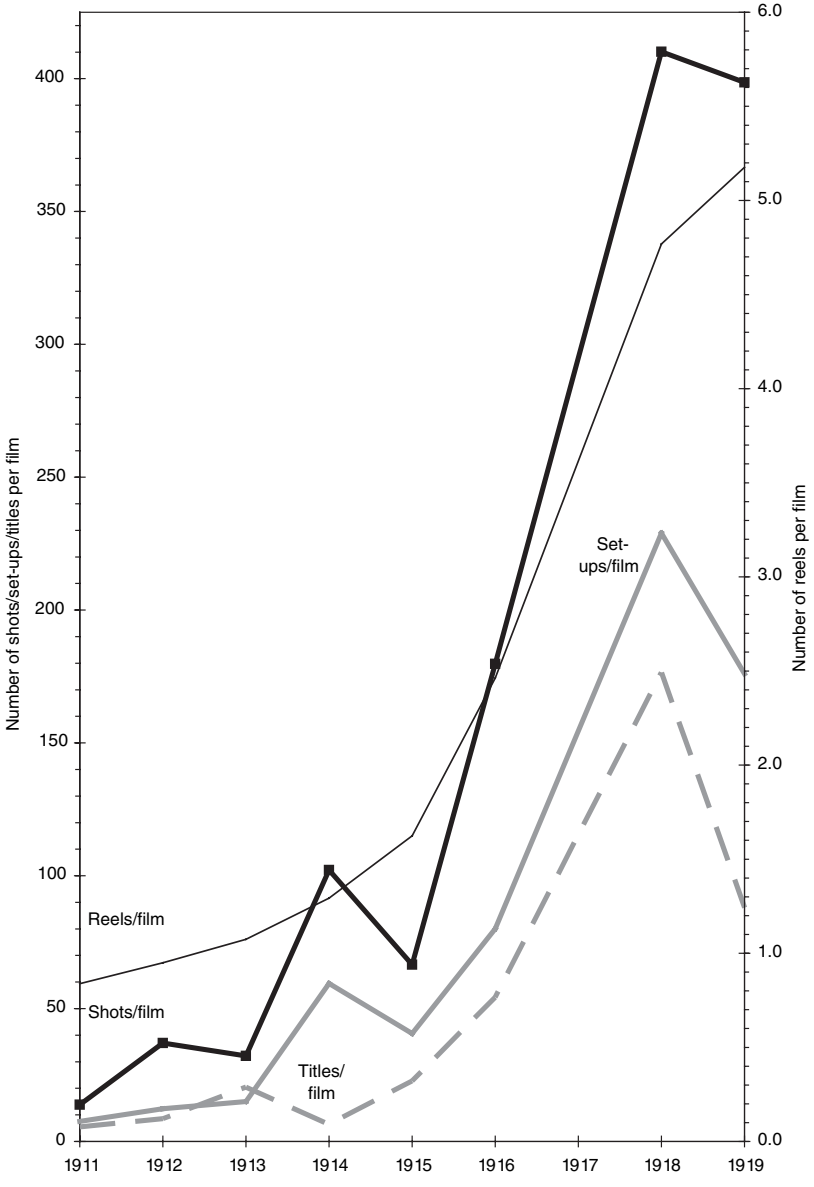

Figure 6.3 Estimated average number of shots, set-ups and inter-titles per film, American Film Manufacturing Company, 1911–1919

Note: These series are based on analysis by Lyons of eleven representative films, combined with the company's average film length, and thus give no more than a rough indication.

Source: Lyons (1974: 87, 170).

'objective' measure of the increase in perceived quality that the jump in sunk costs brought about.

The increases in costs of all these aspects of film making resulted in a sharp growth of total film production costs, coinciding with the rise of the feature. The real average cost of Fox feature films increased sevenfold between 1914 and 1927, the last year before sound technology was adopted, those of Cecil B. de Mille, one of Paramount's producers, increased eightfold between 1913 and 1920,[55] and those of Warner Brothers nearly doubled between 1922 and 1927.[56] Average industry real production outlays more than doubled between 1919 and 1921, and grew 14 per cent annually thereafter.[57]

Rough indicators of the ratio of film production costs to total ticket sales, the 'R&D/sales ratio', are plotted in figure 6.4. The figure suggests a sharp increase between the early 1910s and the mid-1920s. The ratio for Paramount, the market leader, was 52 per cent in 1919.[58] The industry R&D/sales ratio, according to the census data, shows a ratio that lies roughly within the same range as the individual company data, but tends to be somewhat lower and more stable, as one would expect.

According to Sutton, in an equilibrium situation, the value of *alpha* would be smaller than or equal to the R&D/sales ratio of the market leader. An entrant would then not find it profitable to outspend the market leader. The figures show the R&D/sales ratio was high and tended to increase in the long run. If we take the value of 0.52 for Paramount (based on box office revenue), and assume gross rentals to be 0.4 times ticket sales, the R&D/sales ratio would be 0.52*0.4 = 0.21, and, according to Sutton's model, the value of *alpha* would lie below this ratio.

The rise in real *average* production costs does not equal the capital the companies had to sink in their entire film portfolio.[59] Fox Film Corporation increased its portfolio outlays from just $92,000 in 1914 to $1.3 million in the next year, $2 million in 1916 and $4 million by 1917 (figure 6.5). This constituted a massive multiplication of sunk costs. Although few data are available, similar jumps are likely to have obtained for the other escalators. Cecil B. DeMille increased his portfolio outlays from $15,000 in 1913 to $430,000 in 1916, suggesting a massive expansion of Paramount's entire portfolio.[60] By 1919, Paramount was

[55] Figures in 1913 dollars. [56] Koszarski (1990: 85); Glancy (1995).
[57] Census; 1913 dollars. [58] First six months (Lewis 1930: 69).
[59] Sedgwick and Pokorny (1998) stress the importance of portfolios rather than individual films.
[60] See below.

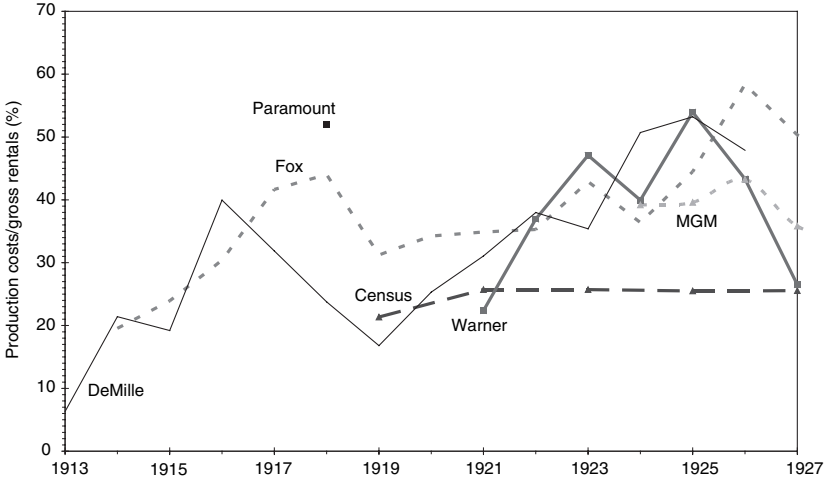

Figure 6.4 Annual production costs/gross rentals ratio for various US film companies, 1913–1927

Notes: DeMille: These do not concern company outlays, but outlays of just one producer of Paramount. The resulting ratio is thus not based on an entire annual portfolio of films, like the other company lines, but on just a few films, generally between one and five, with 1914 and 1915 as exceptions, with seven and thirteen films, respectively. This decreases the comparability of the DeMille line to the other lines, but since so few time series data are available, it is nevertheless plotted here.

Census: total industry outlays as a proportion of US box office revenue, *not* gross rentals (= gross distributors revenue) like the company lines.

Sources: Census: *US Census of Manufacturers*, 1919–1931; market size data: see Bakker (2005a). DeMille: Pierce (1991); Fox Film Corporation: Koszarski (1990: 85); Metro-Goldwyn-Mayer: Glancy (1992); Paramount: Lewis (1930: 69); Warner Brothers: Glancy (1995).

spending $12 million annually.[61] Total US industry real production outlays increased by 35 per cent between 1919 and 1921 – from $32 to $42 million – and grew 10 per cent annually thereafter until 1927, with an 8.1 per cent annual growth per firm. Spending on scenery and stage equipment, relatively endogenous spending categories, increased threefold between 1921 and 1925, a growth of 32 per cent annually. Expenditure on cameras and projectors, basically exogenous expenditure, increased 63.7 per cent from 1921 to 1925, a growth of 13.1 per cent annually.[62]

[61] Based on first six months: Paramount was spending $3.1 million itself, and paid another $2.9 million to outside producers (Lewis 1930: 69).

[62] Census of Manufacturers, 1925.

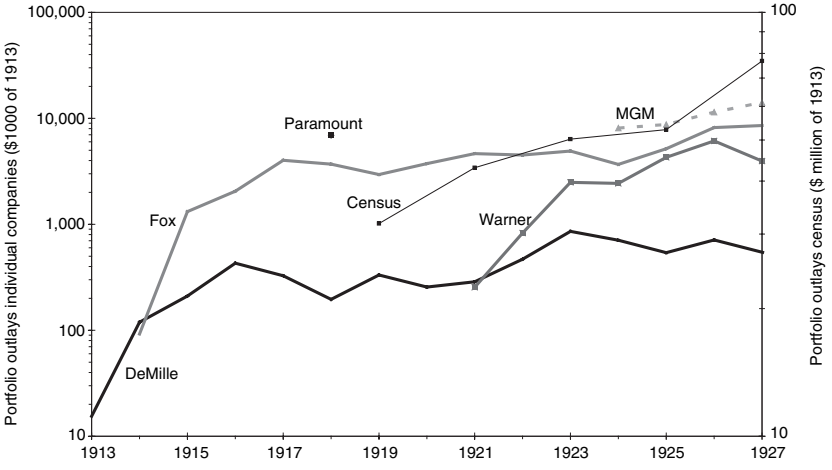

Figure 6.5 Total annual production outlays for various US film companies, 1913–1927, in constant 1913 dollars
Source: see figure 6.4.

The examination of production costs and revenues on a portfolio basis,[63] using annual time series spanning 1914–40 and assuming that portfolio revenue proxied the portfolio's perceived quality, indicates that the value of *beta* – i.e. how 'costly' it is to raise perceived quality – was low, making it relatively easy to increase quality, and thus to escalate outlays on sunk costs. If *beta* had been high, increasing perceived quality would have been too costly to be a profitable strategy, giving a possible reason to reject the sunk-costs hypothesis.[64]

Distribution costs also increased. In the mid-1900s, 125 to 150 independent film exchanges existed, the set-up costs for one typical exchange being $12,067.[65] By 1911, the MPPC had bought most of these and merged them into the General Film Company, a near

[63] Film companies diversified risk by releasing complete, fine-tuned portfolios. Costs and revenues could be estimated with a far lower margin of error than for individual films.

[64] The extremely tentative estimation of a curve similar to $F = k^{\beta}$ introduced by Sutton yields $F = 0.18k^{1.15}$ (adjusted R^2=0.92; F-test, constant and coefficient all significant at the 1 per cent level); where F are the costs and k the perceived quality (proxied by revenues). This gives an estimate of *beta* of 1.15, and this is indeed a rather low value (cf. Sutton 1998: 84), suggesting a high value of *alpha*. (Annual real average production costs for Fox, Warner Brothers, MGM, RKO, Albatros, spanning 1914–40; years per studio vary. See Bakker (2004b: 57).) This estimation merely indicates that the costs of quality improvements were 'not very high', thereby favouring the sunk-costs hypothesis. Better data and econometric techniques are needed for a more precise estimate. See also Chapter 9, pp. 320–3.

[65] Seabury (1926: 8); Musser (1990: 436).

monopoly. In 1914, the French Pathé company founded the first competing national distribution system, with offices in thirty-one 'key-cities', followed by several other companies. In 1919, the operating costs of a national distribution system were $520,000 to $780,000 a year, promotion expenditure not included, rising to $2 million by 1926.[66] Film rentals charged to exhibitors grew 3.8 times between 1916 and 1920.[67] Effective co-ordination and the non-excludability or nationwide character of many forms of advertising eventually made national distribution organisations more cost-effective than the independent regional exchanges. In 1929, operating costs of the 444 exchanges belonging to national networks was 15.2 per cent of business done, for the 75 independent exchanges, 35 per cent.[68] National distributors, 83.3 per cent of exchanges, handled 94.7 per cent of business, while independent exchanges, encompassing 14.1 per cent, handled only 2.2 per cent.[69]

Market structure

Now the increase in sunk costs has been discussed, the question remains what happened to market structure. Sutton's theory implies that in R&D-intensive industries in which sunk costs are increased sharply, concentration will not converge towards zero as market size tends to infinity but will be bounded away from zero. This is an intentionally weak prediction; it does not say anything about the actual level of concentration, which can depend on many factors (for example institutions, collusion) and which for individual industries may be explained by numerous fine-tuned economic models. The power of the weak prediction, however, is that it allows the theory to encompass other, industry-specific, models.

Besides *beta* (how 'expensive' it is to increase a film's quality/selling potential), *alpha* also depends (inversely) on *sigma*, the extent to which a jump in outlays along one technological trajectory enables a firm to steal away sales from other trajectories. *Sigma* is more difficult to measure. A rough approximation is the index of homogeneity h, and it is expected that increases in h over time suggest a high value of *sigma*.[70] Homogeneity (h) can be measured as feature sales over total film sales.[71]

[66] Hampton (1931: 211); Seabury (1926: 4, 198).
[67] 'Gilmore, Field and Company. Investment bankers', in Lewis (1930: 64).
[68] US Bureau of the Census 1929.
[69] The export exchanges, 2.6 per cent of all exchanges, handled 3.1 per cent of business.
[70] We posit here that the speed of change in homogeneity (dh/dt) is directly related to *sigma*.
[71] Initially, films were a (small) part of the programme in music halls and vaudeville theatres. Throughout the silent period, cinemas added live inputs to films, such as music and stage acts. See, for example, Allen (1980); Gomery (1992); and Hanssen (2002).

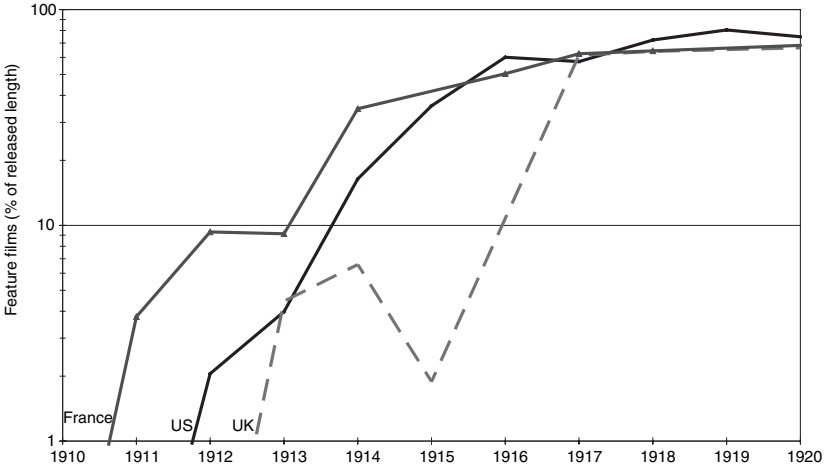

Figure 6.6 Film market index of homogeneity, US, Britain and France, 1910–1920 (total negative length of features as percentage of all releases)
Source: Bakker (2005a).

Figure 6.6 shows a sharp increase in homogeneity during the emergence of the feature film. Over time, the increase in outlays on feature films captured more and more sales from other trajectories.

Although time series are lacking, total film sales also became a substantially larger share of all spectator entertainment revenues, from approximately 11 per cent in 1909 to 36 per cent in 1914, 63 per cent in 1919 and 79 per cent in 1921.[72] This suggests that outlays on feature films had a high value of *sigma* both with respect to the film market as well as to the total market for theatrical entertainment. This is further supported by rising prices for (feature) film tickets during the 1910s. The discovery by cinemas that they could increase ticket prices shows the revenue side of the escalation phase at work. Consumers were willing to pay more for a feature because of substitution and income effects. Rising prices combined with increasing demand (and changing perceived quality) generally show a substitution process at work. For film consumption during the rise of the feature film the substitution effect worked in three ways: the feature film made cinema look more like theatrical live entertainment and thus it became a better (and cheap)

[72] Film market size data Bakker (2005a) combined with US Department of Commerce (1975).

substitute for it.[73] Second, since film was a product with wholly new qualities that could not be found in live entertainment, consumers probably also substituted cinema for expenditure on other items.[74] Third, consumers could substitute watching high-quality feature films for watching shorts or low-quality features. Since the price of cinema was lower than that of most live entertainment, consumers would also benefit from an income effect, which may have induced some consumers to further increase the number of cinema visits, and others to consume spectator entertainment for the first time. This all points to a high value of *sigma* and a disproportionate reward for producers who took a jump in quality.

Making cross-industry comparisons, Sutton also predicts that, contrary to many other industries, as *h* increases in high sunk-costs industries, C_1 will not converge to zero. C_1/h plots for the US, Britain and France show that as *h* increases over time C_1 actually bounds away from zero.[75] Both these findings on *h* are consistent with the sunk-costs hypothesis and do not give reason to reject it.

Testing for a lower bound to concentration as market size increases, however, is the most important way to see whether the sunk-costs hypothesis can explain the evolution of the film industry. For two large samples of contemporary R&D-intensive and advertising-intensive industries, Sutton found the lower bound to the C_4-ratio roughly to be 0.20.[76]

The four-firm concentration ratios are plotted against market size in figure 6.7, and the C_4-ratio over time is given in figure 6.8. Because they are based on released negative length these C_4-ratios may underestimate actual concentration.[77] The figures show that initially, the evolution of market structure followed a traditional pattern, with concentration falling substantially as the market grew.[78] From the mid-1910s, however,

[73] If films were part of spectator entertainment, the relevant index is film over total live entertainment revenues. Initially, however, until the mid-1910s, consumers often bought one ticket for shows that contained both filmed and live entertainment, and many cinemas had some interspersed live acts. A second, easier to measure, index is feature films (as product type) over all film revenues. This index is used here.

[74] Motta (1992) develops an endogenous sunk-costs model in which the economy's total expenditure on the quality good increases with the quality offered.

[75] The plots are available from the author.

[76] Sutton (1991: 114; cf. 1998: 102). For advertising-intensive industries the lower bound was closer to 0.25.

[77] See Bakker (2005a).

[78] For comparison, independently estimated concentration for live entertainment, based on the decline in markup between 1900 and 1938 was very high (Bakker 2007b: 19–21). In 1900 the lower bound Herfindahl Hirschmann index was 0.35–0.40, equivalent to three firms sharing the entire market, which was not inconsistent with the few trusts that dominated live entertainment (see Chapter 2). However concentrated the film industry was, the new entrants probably sharply increased competition in the wider spectator entertainment market.

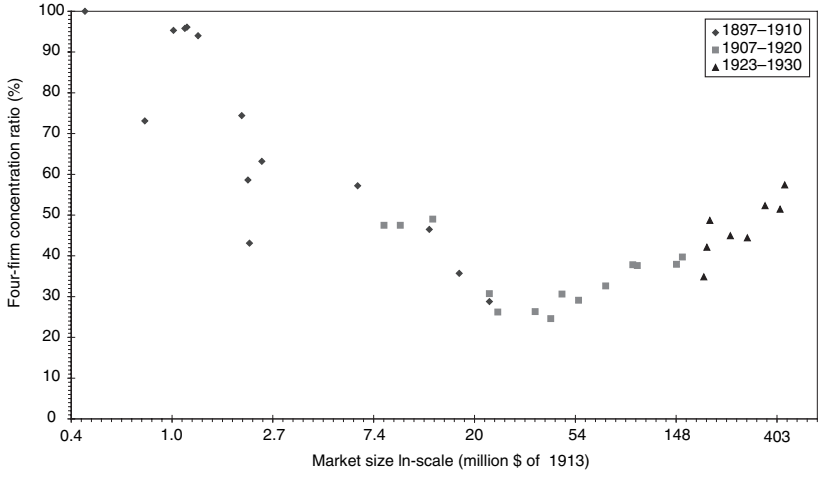

Figure 6.7 Four-firm concentration ratio versus real market size for production, US film market, 1897–1930 (C_4 vs. dollars of 1913)
Note: These three series are based on three different sources (Bakker 2005a) and may therefore not be fully comparable.
Source: Bakker (2005a: 344–6) which includes similar figures for Britain and France.

this traditional pattern broke, and while the market grew sharply, concentration stabilised and then started to increase.[79] This break in the pattern coincided with the rise of the feature film and the decline of the European market share (see figures 6.1 and 6.2). Although data on distribution are less reliable and not available for all years, it suggests a similar pattern, but with a time-lag of a few years.[80] This lagged concentration supports the theory that concentration was driven by a jump in production outlays.

These findings suggest that in the mid-1910s, film became a high-*alpha* industry, and a few 'smart agents' started to escalate their outlays on R&D, thus increasing concentration. If the C_1-ratio is examined over time for the US, it shows a lower bound of roughly 0.10 during the 1910s (suggesting $alpha \leq 0.10$) which is lower than the estimate based on the R&D/sales ratio. During the 1920s, when more reliable revenue data are available, the lower bound was 0.17 (suggesting $alpha \leq 0.17$)

[79] The pattern was less pronounced in France and Britain, probably because data is only available from 1908/09, when concentration had already fallen. This is supported by a similar evolution of concentration as in the US (figure 6.8).
[80] Bakker (2001b).

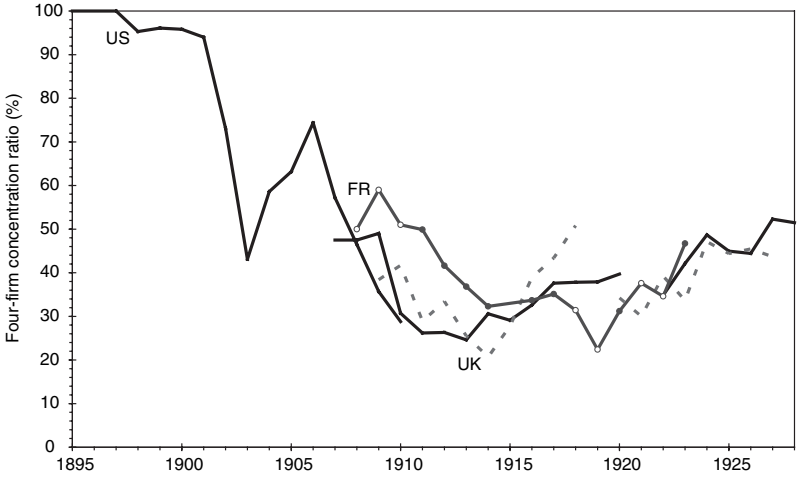

Figure 6.8 Four-firm concentration ratios for the motion picture market, US, Britain and France, 1895–1927

Notes: Bold lines: US. Dotted lines: Britain. Bold lines marked with circles: France.

US: see notes to figure 6.7.

Britain: two series (1909–1918 and 1920–1927) based on two different sources (Bakker 2005a) They may therefore not be fully comparable.

France: the open circles refer to a minimum level of concentration. For the leftmost three, 1908–1910, the market share of the market leader, Pathé Frères, was not available and has been conservatively estimated (see Bakker 2005a). For 1918, 1919, 1921 and 1922, for over 20 per cent of films, no producer could be identified. It is highly unlikely that these films were all made by the same film company, but it is possible that some of these films were actually produced by one of the largest four companies.

Source: see Bakker (2005a: 344–6).

which is in the ballpark of the R&D/sales ratio.[81] Britain and France showed far lower concentration ratios during the 1910s, especially during the war, with lower bounds of c. 0.08 and 0.11. During the 1920s the lower bound increased to about 0.14–0.15 (suggesting $alpha \leq 0.15$), roughly consistent with the US C_1.[82]

In conclusion, these findings on the evolution of market structure give little reason to reject the sunk-costs hypothesis as an explanation for the evolution of the industry. On a theoretical level, the findings are

[81] This is consistent with the observation above that using fims' shares in total released negative length understates the concentration ratio.

[82] For Britain and France no revenue concentration data are available. It is therefore likely that the measured ratio also understates concentration in the 1920s, unlike in the US.

supported by research of Motta and Polo into the international broadcasting industry since the 1970s. Using a model with endogenous sunk costs and vertical product differentiation they explain how concentration could remain remarkably high when technological barriers to entry fell and the television market expanded at its fastest pace since its emergence.[83]

The discovery process

Sutton's theory focuses on outcomes, rather than on the optimality of the strategies that led to that outcome and uses the stability condition (the 'arbitrage principle'), the principle that if a profitable opportunity exists in the market, at least one company will fill it. This implies a weak concept of rationality, since 'one smart agent' is all that is required to fill the gap.[84] This means it is not necessary to know about fims' strategies or the entry process, or the way in which the escalating firms 'learn' and discover the profitability of increasing R&D outlays. An economic history approach, which focuses more on the dynamics, is more interested in exactly what during the 1910s caused an increase in *alpha*, and how companies learned about it, how the first movers discovered that a sharp jump in sunk costs would disproportionately increase revenue, and how they discovered the true value of *alpha*.[85]

Industries can change from low- to high-*alpha* because of, for example, the integration of previously isolated markets, or because consumers are willing to pay more for a (potential) technology. The photographic film industry, for example, became a high-*alpha* industry in the 1960s, when consumers were willing to pay a substantial premium for colour film, and the telecom switches manufacturing industry experienced an increase in *alpha* when previously protected national markets integrated during the 1980s.[86]

In the early film industry, *alpha* increased because of four reasons. First, film technology automated and standardised live entertainment and made it tradeable, thus leading to a process of market integration, which was reaching its heights during the 1910s, when features made cinema an ever better substitute.[87] Many of the lower-value-added local entertainments were now replaced by entertainment produced in one location in the nation and distributed nationwide. Second, a basic

[83] Motta and Polo (2003). [84] Sutton (1997).
[85] On the role of entrepreneurial discovery in economic growth and development see Kirzner (1973, 1985).
[86] Sutton (1998: 113–54). [87] Bakker (2004a).

network of fixed cinemas, an essential distribution delivery system, was more or less complete by the early 1910s, guaranteeing a large potential market. Third, consumer demand for entertainment increased substantially between the 1900s and the 1920s. Finally, before 1913, the MPPC companies had formed a cartel and effectively limited each others' expenditure on film production, leading to an artificial constraint on the R&D/sales ratio. When the federal government started to prosecute the MPPC in 1912, its power quickly diminished, and many rival companies were formed. Firms do R&D to improve their products' quality and steal market share away from competitors. Under the cartel, this incentive to do R&D was absent, and as a consequence, when the cartel collapsed a further reason for escalating R&D emerged.

Only a handful of entrepreneurs massively escalated their production expenditure. From the late 1900s, several firms experimented with different types of film and discovered that some consistently yielded more revenue than others. In the mid-1900s, Adolph Zukor (later Paramount's president), who owned fourteen Nickelodeons in large cities, had problems obtaining films he wanted, and made every effort to search for 'better' pictures. When he exhibited the three-reel, hand-coloured *Passion Play* of Pathé (most films were under half a reel at the time), it was an enormous success, bringing in customers for months. Zukor wanted to move further into these bigger pictures.

> We stayed on with that picture for months and did a land office business ... Then it occurred to me that if we could take a novel or a play and put it on the screen, the people would be interested ... I did approach all the producers then in the business and tried to sell the idea of making big pictures. ... They were so busy turning out [one and two reel pictures] that they would not undertake anything else. In fact, they did not believe that people would sit through pictures that ran three, four, five reels.[88]

In 1909, Zukor sold all his theatres to Loew's (later part of MGM), and studied the motion picture industry for three years, travelling, watching many different types of films, and especially adopting the habit of sitting in the first row, not watching the screen but the faces of the audience as they were watching. 'In 1911', Zukor recalled, 'I made up my mind definitively to take big plays and celebrities of the stage and put them on the screen.' In November of that year he advanced $35,000 for a film starring the French actress Sarah Bernhardt. Competitors were surprised Zukor was willing to pay such a large sum. In March 1912, Zukor released the picture through the chain of vaudeville theatres Klaw and

[88] Zukor (1930).

Erlanger, because the MPPC did not allow it a licence. However, after its initial success, the MPPC gave it a licence and the film grossed about $60,000 – not enough to recoup costs but leading Zukor to remark that his first experiment was not too costly. That is exactly how he saw it: as an experiment to test the market. 'We did gain the knowledge that made us absolutely certain that pictures of the right type had a great future.'[89]

In the early 1910s, other entrepreneurs noted the success of longer Italian films, starting with *The Fall of Troy* and *Dante's Inferno*.[90] These films contained expensive historical sets and mass scenes, and the films lasted three to four times as long as the standard film, about forty-five to sixty minutes.[91] Production costs were high but ticket prices were also higher, and the films became widely popular.[92] In showing these first films, often 'road shows' were used; travelling companies of projectionists, publicity personnel and administrative staff would rent theatres or equivalent buildings in cities and show the film until revenues fell, and then moved on to the next city. In New York and Boston *Dante's Inferno* played for two weeks, while the average American MPPC-film lasted only two days. Moreover, it played in rented 1,000-seat theatres, at a price of $1, while American films normally played in 200-seat Nickelodeons at 5–10 cents. The difference in potential revenue per show was an order of magnitude: $1,000 versus between $10 and $20.[93] This discovery that higher costs, length and ticket prices could disproportionately improve profitability showed some smart American producers the way to the feature film.

By the end of 1913, many cinemas showed short films for six days and a feature film for one night, often a Sunday night. Features' disproportionate popularity was clear from the rental prices: a six days' supply of shorts programmes through one of the three main shorts distributors (General Film Company, Mutual and Universal, at that time) cost $45, while top-rated features rented for $50 for a single night. By the summer of 1914, the smaller cinemas were still showing eight to nine reels of short films for 5 cents admission, while the newer and larger houses offered features for 10–20 cents.[94]

The strong effect of rising sunk costs on consumers' willingness-to-pay (*alpha*) was not only visible when comparing shorts with features, but also when comparing low-quality with high-quality features. In 1915, Vitagraph-Lubin-Selig-Essanay calculated that a cinema showing average

[89] *Ibid.* [90] Cherchi Usai (1989). [91] This was 3,000–4,000 feet.
[92] *Ibid.* [93] Gomery (1986: 46).
[94] Bowser (1990: 213–14). The special qualities of the feature rather than programme length enabled higher admission prices, even for a two- or three-reel film.

features changing daily had daily sales of $300 and a 42 per cent margin ($125). Film rental was 8.3 per cent of sales, advertising 16.7 per cent. If the cinema shifted to a weekly, highly publicised quality film, and doubled expenditure on both film rental and advertising, daily sales would grow to $550, the margin to 54 per cent ($300), while film rental and advertising would be 9.1 and 18.2 per cent of sales.[95]

Industry veteran Benjamin B. Hampton recalled how in the mid-1910s many cinema-owners discovered the profitability of features.

> Owners of theatres, who had been cautiously advancing their admittance rates, learned that their patrons would pay twenty-five cents, or in a few cities as high as thirty-five cents, to see the best pictures; and at these prices the profits were larger than ever before, even though the exhibitor had to pay somewhat higher rentals.[96]

In Europe, the feature film appears to have had a similar revenue generating capacity. Particularly good British evidence, from a somewhat later date than the American data above, actually shows the escalation phase at work at the micro-level and confirms the superior profitability of the feature film: its revenue per metre was nearly three times that of other films. In 1918–19, Pathé Exchange Ltd., a British film distributor, reported revenues of feature films that were 32 per cent higher than revenues of all film formats taken together, when measured in revenue per metre of film.[97] Since feature films were at least several times longer than other formats, in absolute terms the difference must have been even higher. In the next season, 1919–20, the gap in revenue between feature films and other films had more than doubled: feature films now yielded 67 per cent more revenue per metre than all films taken together.[98] If for the latter season, revenues of feature films are not compared to revenues

[95] Bakker (2001a: 472); Koszarski (1990: 34). [96] Hampton (1931: 164).

[97] Revenues per metre for feature films were 33 pence, vs. 24 for serials, 29.5 for comics, 15 for pictorials, 9 for newsreels (*Pathé Gazette*), and 25 pence for all films, on average. 'Report by Hedly M. Smith on the business of Pathé Ltd. for the period 1st December 1919 to 31st May 1920', Beaverbrook Papers, hereafter BP, file H274.

[98] *Ibid.* The same six-month periods for 1918–19 and 1919–20 are compared. Revenue per metre for feature films was now about 47.5 pence, vs. 25 for serials, 36 for comics, 19 for pictorials, 8.5 for newsreels, and 28 pence for all films, on average. Newsreel revenue decline was probably caused by the peace. Total revenue for the six months was £166,994. Despite the high revenue per metre, feature films accounted for only 23% of total revenue, vs. 41% for serials, 22% for newsreels, 9% for comics, and 5% for pictorials. The large serial share was probably due to Charles Pathé's bet that it would become the industry standard, the large newsreel share to Pathé's specialisation in that genre and its world-wide correspondent network. It had been the inventor of the weekly newsreel.

for all films, but to revenues for all *other* films, revenue per metre for feature films was 2.9 times the revenue for all other films.[99]

An advantage of feature films over a popular format such as the newsreel was that revenue did not decline as much each day after release. The rental price of newsreels, for example, halved three days after release, and nine days after release was only a quarter of the initial price, while the number of copies rented had halved on the sixth day after release.[100] These figures lend support to the notion that feature films were disproportionately and increasingly profitable, and that therefore an escalation of outlays on sunk costs on feature film production could be a profitable strategy. It also shows that entrepreneurs certainly found out the profitability of features, and that those in a position most able to do so were the ones active in distribution or exhibition.

Changes in distribution practices formed a vital element in the strategies of the companies that started the increase in sunk costs. The film industry was an industry with large fixed costs, and the marginal revenue brought in by the marginal cinema-goers equalled marginal profits to the cinema owner. Initially, when films were sold, and later rented for a flat fee, the producer saw little of these marginal revenues, but during the 1910s, the changes in distribution practices translated ever more of the marginal distributor and cinema revenues into profits for producers, first by percentage-based producer–distribution contracts, later by similar distributor–cinema contracts.[101] The result was that a producer would actually get part of the additional cinema and distributor revenues that an increase in perceived quality of a film generated, thus increasing the value of *alpha*. Without these changes in distribution practices, an escalation strategy could hardly have been profitable, as it would be the producer who incurred the costs but the cinema-owners who got the additional marginal revenue, equalling profit. The change also increased distributors' incentive to increase advertising outlays, until the last dollar

[99] Unfortunately, the disaggregated profits per metre of film are unavailable. Profit per metre for all films taken together was 3.2 pence in 1918–19 and 2.3 pence in 1919–20.

[100] Letter Frank Smith to Lord Beaverbrook, 2 February 1920, 3, BP file H274; letter H.M. Smith to Lord Beaverbrook, 8 October 1924, BP file H279. The latter letter discusses a change in the pricing structure over time for the *Pathé Gazette*, and thus also discusses the earlier pricing structure.

[101] During the silent period, revenue-sharing contracts between distributors and cinemas were mainly used in a few large city-centre theatres (which accounted, though, for a disproportionate share of revenue), and for a studio's most expensive films, which were often 'road-shown'. Vertical integration into exhibition by the five Hollywood majors combined with their collusion (of which they were found guilty by the 1948 Supreme Court Paramount Decision) was another way to gain access to marginal cinema revenues during the silent period. For a detailed analysis of the contractual evolution of film bookings see Hanssen (2000, 2002).

spent equalled the marginal distributor's profits. So during the escalation phase there was a double effect on producers' revenues: marginal cinema revenues increased sharply because of price increases and capacity utilisation increases, while producers also received more of these marginal cinema revenues.[102]

Hampton underlines the way in which cinemas profited from the unskimmed marginal revenues before the change in distribution practices:

> The exhibitors were buying service at prices that made intelligent theater operation extremely profitable; net return of twenty-five to fifty per cent per annum on the capital invested in movie houses was assumed to be the prevailing rate, but some theaters ran this up to a hundred per cent.[103]

Firms' strategies

The previous section showed how entrepreneurs increasingly became aware of the disproportionate effect an increase in production outlays could have on revenue. This section is more preoccupied with how they acted on the information that came out of this discovery process, to what extent they followed deliberate strategies to increase their sunk costs, how they did it, and how they got hold of the vast amounts of capital needed to embark on such an escalation strategy. The section will also examine whether any differences existed between winners and losers.

Most 'escalators' began as investors in real estate and pioneered the Nickelodeons, which they discovered could maximise the return on property.[104] This is in contrast to MMPC-members, who started as equipment manufacturers and by necessity branched out into film production. These first movers were not technology-driven, nor creatively driven, but financially/real-estate-driven, and this was possibly important in their role as escalators. They knew how important it was for films to increase the return on city-centre real estate, and had experience in obtaining capital. In the mid-1910s there even was a small investment boom in film stocks. Nearly every company with the word 'motion picture' in its name was able to launch an initial public offering.

[102] So the changes in the distribution practices did not merely involve producers attracting away profits from distributors and cinemas, but also a new incentive structure that induced producers to sink far more costs.

[103] Hampton (1931: 164).

[104] Lyons (1974). See also the case of real estate speculation in Pittsburgh, where forty-two Nickelodeons were opened during 1906, as discussed in Musser (1990: 420). In London from 1906 onwards, real estate owners were able to charge a premium of up to 50 per cent for the rent to Nickelodeon operators (Burrows 2004).

Adolph Zukor was one of the first and most successful entrepreneurs who escalated sunk costs. From 1912, his Famous Players Film Company was producing feature films, and in 1914 he was the driving force in the merger of five regional distribution organisations into one national one, called Paramount, which negotiated a twenty-five-year supply contract with Famous Players, the Jesse L. Lasky Company, and later Bosworth Inc. and Pallas. This Paramount group became the US market leader throughout the rest of the 1910s. For a full year, in 1914–15, it was the only company that could provide cinemas with a full year's supply of features (104). During 1916, all these companies merged in several stages into the Famous Players-Lasky Corporation (hereafter called Paramount).[105]

Besides increasing outlays on film production, Zukor's strategy consisted of changing distribution practices to get more of the marginal cinema revenues. The contracts between Paramount and its producing companies gave the producers 65 per cent of gross rentals instead of the then customary flat fee, thus ensuring they obtained marginal distributors' revenue. Gradually, Paramount would introduce the same type of contracts with the larger cinemas in the key cities it supplied.[106] Paramount also started national advertising campaigns for its stars and its features, which now showed disproportionate returns, because Paramount was a national organisation and because it received more of the marginal cinema revenues brought in by the increased advertising. Paramount's gross revenues increased from $10.3 million in 1917 to $17.3 million in 1918, to $12.0 million for the first six months of 1919.[107]

Paramount obtained capital through both debt and equity. Wall Street bank Kuhn, Loeb & Co. arranged a $10 million preferred stock issue for Paramount in 1919, to finance its expansion into city-centre cinemas.[108] According to Hampton, Zukor set the example which was followed by scores of competitors. 'Practically all principal manufacturers concluded to adopt Zukor's compromise – pay large prices, if need be, to directors, novelists, dramatists and continuity writers, hoping thereby to find

[105] Zukor (1930) later remarked about the merger: 'We found interest between producer and distributor was not one.' Paramount's dominant position is illustrated by the Department of Justice's prosecution during the 1920s, and later, in the 1940s, when Paramount was the first-named defendant in the Paramount case.

[106] Paramount executives remarked that initially this could only be done for large cinemas, preferably with exclusive supply contracts or if Paramount owned part of them, as accounting and monitoring costs were too high for smaller cinemas.

[107] Profits as percentage of gross revenue fluctuated, though, from 22.3 to 7.1 to 15.7 per cent, respectively. 'Gilmore, Field and Company. Investment bankers', in Lewis (1930: 76).

[108] Wasko (1982).

something novel and startling to attract the crowds to their own photoplays.'[109]

Several other entrepreneurs increased production outlays at about the same time, most notably William Fox and Carl Laemmle. Fox started in film as a Nickelodeon-owner, and by the late 1900s ran a film distribution company in New York, one of the few that successfully defied the General Film Company, and whose lawsuits instigated the prosecution of the MPPC and GFC for violation of the Sherman Act. In 1914 and 1915, Fox embarked on a massive film production programme, increasing outlays from $92,000 in 1914 to $4 million in 1917. Fox was financially backed by a group of New York investors, led by William F. Dryden, president of the Prudential Life Insurance Company, which itself also invested in Fox Film Corporation.[110] It is one of the ironies of the escalation phase that Fox's quite unprudential fortyfold increase of production costs was partially financed by Prudential Insurance. Just like Paramount, Fox set up a nationwide distribution organisation synchronously with increasing production costs, enabling him to advertise nationwide, and to receive more of the marginal distributors' revenues. Fox set up a British distribution subsidiary in 1916, followed by many more foreign subsidiaries during the 1910s, just as Paramount did.

Carl Laemmle started in film in 1905 when he bought and set up a string of store-front theatres. Some years later he founded a distribution company. When in the late 1900s the MPPC/GFC tried to monopolise film production and distribution, Laemmle set up the Independent Motion Picture Company (IMP), a major competitor of the trust. In 1912 with several other entrepreneurs he formed the Universal Film Company, a nationwide distributor, which distributed the output of a string of independent companies. In 1913, Laemmle acquired full control of Universal, and took care that an increasing part of Universal's supply was made by its own production company. In 1915, he set up Universal City Studios, near Culver City, California, where the land alone cost half a million dollars.[111] Universal got its capital mainly through the stock market. In early 1916, it was reported that Universal's common stock had paid an annual dividend of 20 per cent, on average, between its foundation in 1912 and 1916.[112] In the early 1910s, IMP and Universal were leaders in increasing production outlays but, later in the escalation phase, Laemmle became more cautious and did not follow the path of Paramount and Fox. Instead, he focused on supplying secondary cinemas outside the main population centres.

[109] Hampton (1931: 218). [110] Wasko (1982). [111] Bowser (1990).
[112] Common monthly dividend fluctuated between 0.5 and 3 per cent (Davis 1916).

Paramount and Fox would become two of the five major Hollywood studios that dominated international film production and distribution from the 1920s. The other three did not originate in the escalation phase but were based on companies that existed at that time. Metro-Goldwyn-Mayer was based upon Loew's, a theatre circuit stemming from the 1900s and Goldwyn Pictures, a not-so-successful escalator. The Warner brothers, Nickelodeon entrepreneurs from the 1900s, had entered feature film distribution in the 1910s, and bought Greater Vitagraph (the remnant of the MPPC companies) and First National (a producer–distributor set up by cinema chains in the late 1910s) in the mid-1920s, backed by Goldman, Sachs & Co. Finally, Radio-Keith-Orpheum (RKO), financially backed by Merrill Lynch and for some time managed by Jack Lynch, was mainly based on the acquisition of Pathé Exchange in 1921, and of the Keith-Orpheum theatre circuit. During the late 1910s and the 1920s, these emerging Hollywood majors started to buy large cinemas in key cities of the US, thus further increasing their share of marginal cinema revenues.[113]

Where the above entrepreneurs succeeded, many others failed. Several film companies grew rapidly and joined the jump in outlays, but did not prove successful. Triangle Film Corporation was founded in the summer of 1915. Its strategy was to set up a national distribution network (with twenty-two exchanges), to buy prestigious city-centre theatres, and to spend huge sums on feature films made by the star producers D. W. Griffith, Thomas Ince and Mack Sennett.[114] Unlike its competitors, it aimed at films with famous stage stars based on classical plays, paying Sir Herbert Tree, for example, $100,000 for three months of his services, mainly used on Shakespeare's plays. Investors initially had great confidence in the strategy and Triangle stock jumped by 40 per cent almost immediately after its flotation in July 1915, reaching a high of 78 per cent over its $5.00 offer price by October 1915. After that, everything went downhill. The American public did not like stage actors and filmed stage plays,[115] and Triangle was underspending on feature production. It spent on average about $30,000 per picture, while Paramount was spending in the range of $65,000 to $75,000.[116] By

[113] Contracts often were not optimal, given monitoring costs. The forced divestment of their cinema chains by the US Supreme Court in 1948 did not diminish the dominant position of the Hollywood studios in film production and distribution.

[114] All Triangle information is based on Lahue (1971).

[115] This literary, theatrical cinema was possibly more popular in Europe. Triangle held a substantially larger British and French market share in the time series analysed.

[116] This is not inconsistent with Sutton's finding that often only large jumps in endogenous sunk costs are profitable, not small steps.

October 1916, its shares were trading at only 40 per cent of their issue price, and it was forced to sell its distribution network, which cost $1.5 million annually to operate. It fetched $600,000, with the buyer remaining contractually obliged to distribute Triangle's output. In 1917, the company was reorganised by a new production manager, who cut costs by $2.5 million annually. This was not enough to avert receivership in early 1919.

Another loser was the Balboa Amusement Company of Long Beach, California.[117] Founded in 1913 by local businessmen, the company operated a large studio in which it invested $400,000, thus becoming the largest employer and largest tourist attraction in Long Beach. It contained twenty buildings on eight acres and an eleven-acre outdoor shooting area. Part of the studio was rented to other producers, and part was used by Balboa itself. In the fall of 1914, it made two long-term distribution agreements with Fox Film Corp. and Pathé Exchange, both national distributors. Balboa's strategy was to turn out as large a number of reasonable quality films as possible. Subsequently, Balboa expanded production, turning out 6,000 feet of negative stock and 150,000 feet of positive copies weekly (its printing department alone represented an investment of $50,000). But the massive increase in outlays on its film portfolio overextended the company. In early 1917, Balboa's distributors could not place its films, and with seventeen unreleased negatives in its vaults, it filed for voluntary bankruptcy. Without its own distribution network and without good contracts, Balboa saw little of the marginal distributor and cinema revenues. Moreover, its major focus was to increase its quantity of output rather than its films' perceived quality, which ultimately did not prove the optimal strategy.

The Mutual Film Company, founded as a distribution organisation in spring 1912, also tried to join the race. It released the films of several smaller enterprises, and acquired the Majestic and Reliance companies. It only half-heartedly joined the escalation phase. In 1916, with its stock below the 1912 issue price,[118] it tried to catch up in one jump, offering Charlie Chaplin $670,000 a year to come to Mutual. Chaplin's films were extremely successful and extended the life of Mutual, but after a year he departed, and Mutual finally collapsed in spring 1919. One of its problems was that it had complicated financial relationships with the many different production companies for which it distributed.

World Film Corporation was a company that spent massively on producing and distributing features during 1914–17 and then went spectacularly bankrupt. In the fiscal year ending June 1915, it had made a

[117] All information about Balboa is based on Jura and Bardin (1999).
[118] Davis (1916).

profit of $329,000, roughly 20 per cent of its outstanding share capital but paid no dividends.[119]

The eight original cartel members of the MPPC all went bankrupt or were marginalised, as their voluntary restraint of R&D expenditures had left them with few capabilities to make and market films. The MPPC companies' success was based on short films and they seemed unable to adapt. In 1914, as the feature film was starting its run to dominance of the film industry, one of its members, William Selig, remarked 'That the single reel photo-drama is the keystone of the motion picture industry becomes more apparent daily.'[120]

The only member that survived and made significant profits until the 1920s was Pathé Frères, which had left the cartel and set up its own national distribution network.[121]

Besides the winners and the losers, there were also some 'wallflowers', companies that did not join the escalation phase. Four of the eight MPPC members formed the Vitagraph-Lubin-Selig-Essanay (VLSE) distribution company, which later merged with the Vitagraph production company, forming Greater Vitagraph, financed by investments from American Tobacco.[122] Although Vitagraph survived and remained profitable, and eventually started to make feature films, it remained a minor player. When Warner Brothers bought it in the mid-1920s, it was solely to acquire its US and foreign distribution networks, through which Warner planned to pipe its sound films. The other MPPC producers disappeared from the market. Edison quit production, Lubin went bankrupt and the other companies also dissolved or went bankrupt, or continued as small, insignificant outfits.

Benjamin Hampton, vice-president of American Tobacco, who negotiated an (eventually botched) merger between Paramount and VLSE, summed it all up:

> In every other business than motion pictures, caution contributes to success, but in the movies the conservative has almost invariably disappeared from the industry. History had repeated itself each time radicals and conservatives came into conflict. In 1917, while prudent manufacturers, unable to adjust their minds quickly to the high-pressure methods necessitated by the new conditions, were thoughtfully analysing wage demands, venturesome competitors rushed in and took their celebrities away from them, agreeing to salaries that generally were declared 'impossible'.
>
> A few of these daring showmen got possession of stars that the public loved, and, although the prices paid seemed very high, they were able to pass the additional costs—through the theatres—to audiences, who paid the bill cheerfully.

[119] *Ibid.* [120] *Moving Picture World*, 11 July 1914, quoted in Bowser (1990: 214).
[121] See below. [122] Hampton (1931).

These producers made money, but others, more reckless than wise in the bidding contest, found themselves saddled with players who failed as box-office attractions. Such producers sustained severe losses in 1917–18, and some of them soon succumbed and joined the ultra-conservative producers in fading from the screen.[123]

The many mergers, dissolutions and bankruptcies during the escalation process fit well into the sunk-costs framework: when the quality race started, sunk costs increased and concentration rose, either through consolidation by mergers, by exit, or both.

The decline of the European film industry

Above, it has been argued that theory on sunk costs and market structure can explain the sharp jump in production outlays during the 1910s, the emergence of the feature film, and the increase in concentration in the industry. The question remains, however, how this can explain the decline of the *European* film industry. Nothing put forward in the explanation above would have prevented European companies from participating in the escalation phase.

The explanation for European companies not fully participating points back to the First World War. Although the war was not a direct cause of the decline of the European film industry, as has been argued above, and many companies remained profitable, the war can explain Europe's relative decline. The war made it very difficult for companies to participate in the escalation phase. On the supply side, it was difficult, if not impossible, to obtain the vast amounts of venture capital needed for a jump in production outlays.

Also, other products, especially newsreels, were very popular and profitable during the war. Pathé Exchange, for example, Pathé's US subsidiary, made large profits on war documentaries shot in Europe. *Battle of the Somme* had receipts of at least $122,000, *The Tanks* of $67,000 and *Retreat of the Germans* of $116,000.[124] Revenues per booking were $16, $25 and $21.[125] The Hearst-Selig *Official War*

[123] *Ibid.*: 169–70.

[124] The exact figures are $122,020, $71,485 and $116,167. Pathé Exchange, Inc. 'Statements of collections . . .' (1918); Charles Urban Papers, Science Museum, London, URB4/1–153. See also McKernan's (2002) detailed study, which shows that these films were rather exceptional and their costs probably high because of idiosyncratic circumstances and government involvement. The rental figures still show the revenue potential of news films, however, and Pathé Exchange did make large profits on the films.

[125] Calculated using the number of bookings reported in McKernan (2002).

Review, which ran in thirty-one weekly instalments in 1918 and 1919, had total rentals of $335,000, with an average rental of $48 per booking.[126] These revenues, admittedly exceptionally high for non-fiction films, were not insubstantial compared to those of feature films. The average rental of a Fox feature film in 1917, for example, was $102,000, while the rentals of the three features made by Paramount's star producer Cecil B. de Mille ranged between $242,000 and $446,000.[127] Given the far lower cost of war films, including the inability of creative inputs such as actors and directors to extract rents, initially newsreels and non-fiction films may well have been more profitable to European firms than feature films. Over time, however, it appears that features became more and more profitable, and they probably also faced far less declining returns as firms turned out more of them. Sales figures of Pathé Exchange in Britain showed a sharp increase in the revenue per metre for feature films compared to other formats during the 1919–20 season, to about three times the revenue of other formats, although the costs of feature films were probably also substantially higher.[128]

An implication of the above theory is that for products with high sunk costs, market size was all-important, since total costs (nearly equal to sunk costs) would be determined by potential revenue. The European film industry could thus be so strong initially simply because sunk costs were low but, as sunk costs in the film industry grew, market size became ever more important and the European companies found themselves increasingly at a disadvantage in their small home markets. Charles Pathé underlined the growing importance of market size for film production just as the European market was disintegrating:

> The big countries, above all when they are very wealthy, are endowed more favourable than France, because their capacity to amortise is infinitely more significant and faster than ours. ... Having the advantage of their huge interior market, which, concerning box office revenue, represents forty to fifty times the French one, thus three quarters of the world market, the Americans can engage considerable sums in the production of their negatives, amortise them completely in their home market, and subsequently conquer the export markets all over the world, especially those of countries that cannot afford the luxury of having their own national film production. The prime cinematographic importance of France in the world rested solely on its initial advantage and would have to disappear the day the building of the American film industry was finished. This day has come.[129]

[126] *Ibid.*: 384. See also Fielding (1972.
[127] See sources for figure 6.4, above. On De Mille, see Pierce (1991: 308–17).
[128] See the Pathé Exchange UK figures discussed above.
[129] Pathé (1940: 98, 92–3); see also Wilkins (1994).

As long as products are easily exportable, market size is closer to the size of the world market rather than to a particular domestic market. Unfortunately for the European companies, as sunk costs increased, so did both cultural and legal trade barriers. Before 1914, European countries were relatively open to each others' products but during and after the war consumers became more hostile to products of enemy countries, especially with cultural products like films. This resentment was reflected in legislation, as German films were not allowed to be shown in France and Britain until the early 1920s and Germany responded with a reciprocal policy. Before 1914 legislation concerning film trade was minimal as films were relatively new products. After 1914, however, taxes and duties increased, and in the mid-1920s most European governments introduced special legislation controlling the number of foreign films that could be shown.

Access to the US market remained unchanged and therefore cannot have been a reason for Europe's decline in the US.[130] Also, as European film companies became more dependent on their own national markets, the growth of these relative to the American market was hampered because of the imposition of large amounts of entertainment tax on cinemas, varying from 20–50 per cent. Thus, synchronously with the disintegration of the European home market, the individual countries' film markets also diminished, leading to a dead weight loss, and, moreover, decreasing the relative price of live entertainment, thus further reducing the film market.[131] Faced with suboptimal growth of home and export markets, an escalation strategy was a difficult option for European film companies.

Nevertheless, several European companies started a strategy that came close to escalation. Two major European 'escalators' were the French Pathé and the Danish Nordisk. Pathé had obtained its capital from the Paris stock exchange, from a few industrial families from the Lyon region and from a few French banks, such as the Banque Bauer et Maréchal. Still, Pathé's American operations must have needed large amounts of capital during the war, and it is unlikely that French sources

[130] Tariff rates for 1,000 feet of positive film declined from $207 in 1899 to $160 in 1909, to $97 in 1913, to $57 in 1922. Rates for 1,000 feet of negative film changed from $206 in 1899 to $290 in 1913, to $172 in 1922 (all rates in 1982 dollars) (Thompson 1985: 20–2). Tariffs per se only had a limited impact on foreign revenues, because the number of copies and viewings that a film generated within a foreign country could not be taxed by customs. Unlike Europe, the US did not introduce legislation limiting the showing of foreign films.

[131] The US also introduced an Admission Tax, but this was only a flat 10 per cent, levied on live and filmed entertainment alike.

Table 6.1 *Profits of Pathé Frères, in dollars, 1911–1919*

	US	Total	US/Total
1911	388,374	852,980	45.5
1912	714,595	1,210,681	59.0
1913	899,491	1,401,020	64.2
1914	−357,082	−258,799	−138.0
1915	247,037	597,590	41.3
1916	460,484	1,253,724	36.7
1917	282,234	1,107,582	25.5
1918	269,280	1,070,611	25.2
1919	667,046	1,224,433	54.5

Note: total profits exclude the profits of Pathé's phonograph subsidiary.
Original figures in francs, converted using exchange rate.

would have handed out more capital, even if it had been allowed to leave the country.

When Pathé arrived in New York in September 1914, his American subsidiary was on the verge of bankruptcy and it was rumoured that William Fox had offered to take it over. Pathé managed to reorganise the whole American company in a matter of a few weeks, to fend off creditors and to obtain new capital. He profited greatly from having a national distribution organisation and from several expensive and highly advertised serials, films in weekly instalments. Pathé foresaw the serial becoming the industry standard and was cautious about spending too much on producing feature films, which he thought would be a passing fad. He also made profits with his newsreel, which had been the first regular newsreel in the US when it was introduced in 1909. The result was that, although Pathé Exchange remained profitable, and Pathé eventually switched to making feature films, it became somewhat marginalised and grew more slowly than the market. Nevertheless, as the profit figures in table 6.1 show, it remained profitable during the 1910s, except for 1914, and was a minor major player. In the early 1920s it was sold to Merrill Lynch, and eventually became part of RKO.

Charles Pathé wrote that in the late 1910s he had faced the choice between moving his company to Hollywood or divesting his foreign business and focusing on distribution in France. He chose the latter.

They have asked me a lot: 'Why did your American subsidiary Pathé Exchange not become a fully American company?' I have dreamed a lot of that possibility.

Maybe I would have done it, had I been much younger, but this transformation would have meant the permanent relocation of our business from France to America, and my permanent residence in that country. I was too old to occupy me with that project.[132]

The other large European company that adopted a strategy that came close to escalation, the Danish Nordisk, was financially strong and was one of the first to release feature-length films. In 1909, it even held talks with Pathé on the possible formation of a European film cartel, similar to the MPPC, which eventually came to nothing. During the 1910s, Nordisk rapidly expanded feature film production. Nordisk's home market was Germany, which must have been very profitable until 1917, and it exported its films throughout the world. Nordisk bought distributors and cinema chains in Germany, Switzerland and Austria. However, it held only a small market share in the United States where it had problems with its sales manager and complained continuously that the American market was unprofitable.[133] In 1917, Nordisk's expansion came to a halt when the government forced it to merge its German assets into the UFA company.[134] While the sudden loss of the German home market did not threaten Nordisk's continuity, it made continuation of an escalation strategy difficult. From being a potential European market leader, Nordisk changed into a small Danish film company and went bankrupt in the late 1920s.[135]

Of the smaller Italian production companies, two made attempts to increase outlays on film production costs and film portfolios. Cines appeared to have been making preparations for an escalation strategy. It had received capital from a group of US investors and had acquired German distributors and cinemas to increase its share of the marginal cinema revenues that its films generated. However, when the war started most of these investments were lost and Cines' future as a European market leader was shattered.[136]

The second attempt was led by George Kleine, a Chicago film importer and member of the MPPC who made huge profits importing foreign films into the US, using his MPPC licence to sell the films. In the early 1910s he took several of the big Italian spectacle films, such as the *Last Days of Pompeii*, on road shows. In 1913, he agreed with Pasquali, an Italian production company, to jointly set up a firm that was to make large and expensive Italian historical spectacle films of the kind that were so popular in the US, but now combined with US star actors and actresses.

[132] Pathé (1940: 97). [133] Mottram (1988). [134] Kreimeier (1992).
[135] It was revived about a year later and still exists today. [136] Kallmann (1932: 3).

Preparations were made and construction of a large studio complex outside Turin was started. However, the advent of the war caused the cancellation of the whole project. All that remained were the abandoned remnants of the never-finished studio compound. They still stand there today as a silent reminder of an era long-forgotten, a future never realised.[137]

Several other French companies did not attempt an escalation strategy. Gaumont and Éclair, Pathé's main competitors in France and also quoted on the Paris stock market, both set up US and other foreign subsidiaries, but these firms were cautious about increasing outlays on film production costs. In 1914, when the US escalators were spending at least $10,000 to $20,000 a film, Léon Gaumont, for example, instructed his US manager not to spend more than $10,000 on the entire 1914 production portfolio.[138] Both companies eventually went bankrupt, Éclair in 1919, Gaumont in the 1930s.[139] Smaller French companies such as Méliès and Lux were possibly in a less advantageous position to embark upon an escalation strategy, and would have had difficulties in obtaining capital.

One might be surprised that just four years made such a difference for Europe's film industry, a difference that was never challenged, when US dominance in many other industries has been. However, the essential difference was that films were (copy)rights, and therefore, contrary to manufacturing industries, protection could be easily evaded, no foreign production plants were needed, and 'dumping' was easy because reproduction was costless. In the car industry, for example, production costs, transportation costs, tariffs, and the need for foreign production plants all were obstacles to absolute US dominance. In the car industry no similar jump in endogenous sunk costs took place, since most costs were exogenous and dictated by technology. The creative inputs in the car industry (i.e. experts working in R&D) were less scarce than in the film industry. Even so, since cars were goods and not rights, no vertical integration was needed to maximise profit, since 'perfect' selling contracts could be written, and foreign distribution networks were therefore less of an advantage. In the film industry high endogenous sunk costs, costless reproduction, easy tariff evasion, and the absence of foreign production plants led to high scale economies and increasing returns in international trade.

[137] Cherchi Usai (1989). [138] See above.
[139] Both companies were revived and still exist today. Gaumont was bailed out and managed by the French state for some time during the 1930s.

Conclusion

This chapter has shown how initially the rapidly growing film market resulted in more firms entering the film business and, as a consequence, declining concentration. From the mid-1910s, however, as the market kept expanding rapidly, concentration stabilised and then increased as the market continued to grow. The cause was the rising pay-off for improving film quality because of increasing market integration, made possible by the industrialisation (automation, standardisation, tradeability) of entertainment discussed in Part I, by the completion of the distribution delivery system (a network of fixed cinemas), by the rapidly increasing demand for low-priced entertainment, and by the decline of the MPPC trust that had kept quality artificially low.

The industry, and several firms in particular, became part of a process of discovery of the higher pay-offs for improved quality. At the firm level, changes in the vertical structure, both through ownership and through contracts, translated ever more cinema marginal revenues into producers' marginal profits, further increasing the pay-offs of improved quality.

During the quality race, four important and partially distinct film industries or industrial districts existed. The two mature ones were the industries in Europe and on the US East coast in New York and New Jersey. Two new industries were emerging in Florida and in Southern California. The three Atlantic industries lost out to Hollywood in two stages. This chapter dealt with the first stage, in which European firms' participation in the quality race was hampered by a declining effective market size because of a disintegrating European film market. This was brought about by war, tariffs and protection, and a high amusement tax that disproportionately weighed on cinema, lowering the relative price of live entertainment. The First World War also made it difficult for European firms to obtain the large sums of venture capital needed for an escalation of quality. The war probably also made other products, such as the newsreel, initially more profitable than feature films.

By the 1920s, most large European companies had given up film production altogether. Pathé and Gaumont sold their US and international business, left film making and focused on distribution in France. Éclair, their major competitor, went bankrupt. Nordisk continued as an insignificant Danish film company, and eventually collapsed into receivership. The eleven largest Italian film producers formed a trust, which failed terribly and one by one they fell into financial disaster. The famous British producer, Cecil Hepworth, went bankrupt. By late 1924, hardly any films were being made in Britain. American films were shown everywhere.

Had the escalation phase not taken place during the war, had the European film market not disintegrated into small domestic markets, a more balanced international industry might have emerged, as later happened in the music industry, which experienced an escalation phase in the 1950s and 1960s with the rise of rock music and the rapid downward diffusion of hi-fi sets, just as the integrating European markets grew at their fastest pace in history. Unfortunately, one can only speculate about other outcomes. But it is clear that the path the industry followed over the rest of the century depended heavily on what happened during those few years in the mid-1910s.

Two mysteries remain: the question of what happened to the other two Atlantic film production districts in New York and Florida, and the question of why European firms could not catch up with their American counterparts; once it became clear that the feature film was becoming the industry standard, why could they not simply imitate the strategies of the successful early movers in the US? It turns out that these two questions are closely related. They will be further investigated in the next chapter.

7 Europe's failure to catch up

In the early 1920s, then, the European film industry was a dismal undertaking. It had experienced a collapse from world leadership to an existence on the margins of the world entertainment industry.[1] The American industry held the largest share of many markets, sometimes above 80 per cent, as was the case in Britain and France. The largest European companies had left film production and focused on distribution and exhibition.

The surprising aspect to this collapse is that it has lasted until the present day. One might wonder why even a single European major film company, comparable to the Hollywood studios, did not emerge. A European film company could have secured access to a large amount of capital, either through banks or the stock market. It could have used this capital to set up a large studio complex in Nice, Madrid or Naples, and fill it with stars, directors, cameramen and other creative and technical inputs, brought away from Hollywood and elsewhere. It could have used its capital to multiply its film budgets and its output of films to a level comparable to Hollywood's. It could have set up its own distribution subsidiaries in every major film market. It could have offered its films in large blocks and on advantageous conditions to cinemas in other countries, underbidding foreign industries. The venture could have made large profits, and European films could have been shown widely in all major markets.

Yet, this did not happen. During the rest of the twentieth century Europe did not create a single 'major' of its own, not even a short-lived one. It did not happen despite the generous government protection that emerged in the mid-1920s in many European countries, and huge government subsidies, which followed later. It did not happen despite the introduction of sound technology in the late 1920s, which increased the share of domestically made films in European markets, but failed to revive the European industry to its previous splendour.

[1] Parts of this chapter are based on Bakker (2003b) and Bakker (2005b).

This chapter will examine why the European film industry did not manage to catch up with the American one. It is worthwhile to ask this question, since there are few other industries in which a difference of such a magnitude exists between Europe and America. Although one could argue, for example, that the European car industry was in a similar dismal state after the First World War, it did manage to catch up. The question remains, then, what was so special about the condition of the European film industry that it could not catch up.

First, market size, sunk costs and market structure in the interwar period will be examined in a similar fashion to the previous chapter. Second, seven general reasons for Europe's failure to catch up will be discussed, all of which had to do with the European film industry being too late: first mover advantages, collusion, an unbridgeable gap in sunk costs, agglomeration benefits, the coming of sound, national origin becoming a brand in itself, and, finally, the rise of protection.

A key issue lurking in the background is that not only did the European film industry lose out to the American firms, but within the US the film industries in New York/New Jersey and in Florida lost out to Southern California. Because this geographical concentration inside the US happened after the European film industry had declined, it cannot be a reason for the decline of the European film industry, but it is likely to have become a factor preventing the Europeans and other potential film industries elsewhere from catching up.

Like the previous chapters, this chapter does not endeavour to give a complete history of the French, British and American film industries in the interwar period. The most important difference facing the European and American industries, the size of the market, will be examined first.

The quality race – Mark II

Market growth

In all three countries, the market grew rapidly until the early 1930s. In the United States, real consumer expenditure on cinema grew at a pace of 10.3 per cent a year between 1921 and 1927.[2] After the coming of sound, and despite the Depression, expenditure kept growing, at a pace of 11.6 per cent annually, reaching a high of $467 million (constant) dollars in 1931. Expenditure then declined, only to grow again from 1934, reaching the 1931 level again in 1938. This does not mean that the quantity consumed decreased; taking into account the substantial

[2] See Chapter 3.

lowering of admission prices in the early 1930s, cinema attendance actually boomed,[3] with many consumers substituting cinema for live entertainment. After 1938, real expenditure grew at a pace of 13.5 per cent annually until 1945.

The number of cinema seats remained stable during the 1920s. Between 1932 and 1937 seating capacity grew to 11.5 million seats, an average annual increase of 1.3 per cent (figure 5.2). However, of these seats, one million were in theatres not in operation. Between 1937 and 1939, total seating capacity declined to 10.8 million seats, partly due to the closing of cinemas not in operation.[4] Seats per 100,000 inhabitants declined somewhat during the 1920s and grew during the 1930s. This may have been due to the coming of sound, which increased the capital cost of cinemas, and probably the minimum efficient scale. It is likely that smaller cinemas, for which the investment was not warranted, closed down. With expenditure growing faster than the number of seats, revenue per seat must have increased substantially.[5]

In Britain, total real entertainment expenditure grew 4.3 per cent a year between 1921 and 1928.[6] Growth accelerated to 7.6 per cent between 1928 and 1931, possibly because of the talkies. Between 1931 and 1938, expenditure increased only 0.7 per cent annually. From 1934 onwards disaggregated expenditure figures are available. In that year, cinema expenditure was £46 million, about two-thirds of all spending on spectator entertainment. By 1938 this had decreased to £44.5 million, slightly under two-thirds of all spectator entertainment expenditure, implying a decrease of 0.8 per cent a year. However, the number of tickets increased from 903 million in 1934 to 987 million in 1938, or 2.3 per cent annually. Just as in the US, this was made possible by a sharp price decline, of 3 per cent a year.

In France, real entertainment expenditure grew only 0.5 per cent annually between 1922 and 1926.[7] The talkies boosted this growth rate to 13.7 per cent between 1926 and 1933. Then growth stalled to a mere 0.2 per cent per year until 1938, although falling prices probably enabled the consumed quantity to grow far faster. Nevertheless, the combined growth rate still made film the fastest growing French industry in the 1930s.[8]

[3] May (2000: appendix). [4] Wood (1986).
[5] Through higher prices, more tickets sold per performance, or more performances per cinema. Because sound increased cinema's set-up costs, city-centre cinemas with high prices, sales and capacity utilisation may have replaced smaller cinemas, for which the switch to sound was too costly.
[6] See Chapter 3. [7] See Chapter 3. [8] Sauvy (1984: 152, 318).

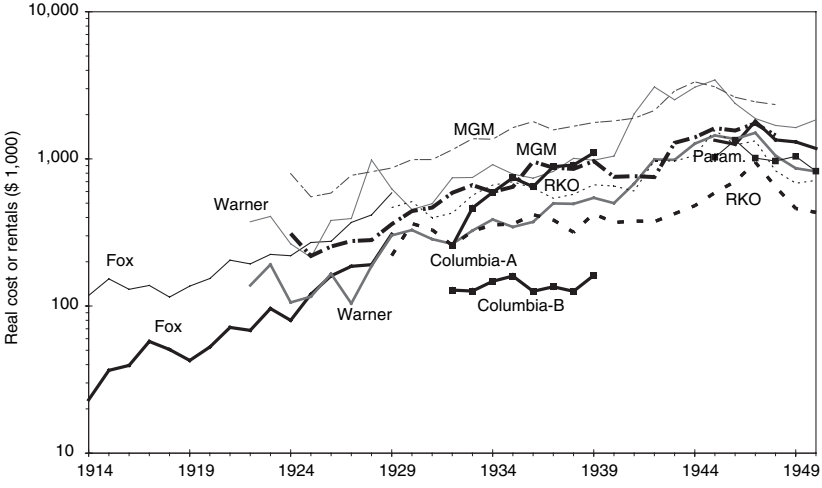

Figure 7.1 Real average cost and real gross rentals of major US producer-distributors (1927 dollars), 1914–1950

Note: The bold line refers to costs, the thin line refers to gross rentals. For Columbia, Paramount and for Fox in the late 1940s only cost figures are available. 'Columbia-A' refers to the real average cost of Columbia's A-films, 'Columbia-B' to the studio's B-films.

Source: Compiled from Koszarski (1990: 85); Conant (1960); Glancy (1992, 1995); see also Bakker (2001b).

Sunk Costs

In the United States, sunk costs grew fastest until the early 1930s, first driven by the feature film, then by the talkies (figures 7.1 and 7.2). In the 1930s growth remained modest, while during the war production costs boomed, possibly because of government limits on the number of films, which stimulated more expenditure per film. Another factor was the exit of many smaller companies that were not allocated resources by the government.[9]

The average costs as a share of revenue fluctuated considerably. Nevertheless, from 1914 to 1940, they increased from about a fifth for a 1914 Fox feature film to about half for MGM, RKO and Warner films in 1940. Relative costs increased sharply after the introduction of sound, but came down again in the 1930s, possibly because of lower-cost sound technology as manufacturers cut equipment prices and some patents

[9] See, for example, May (2000). The raw chemicals and technical materials such as celluloid were rationed, and allocated by the government.

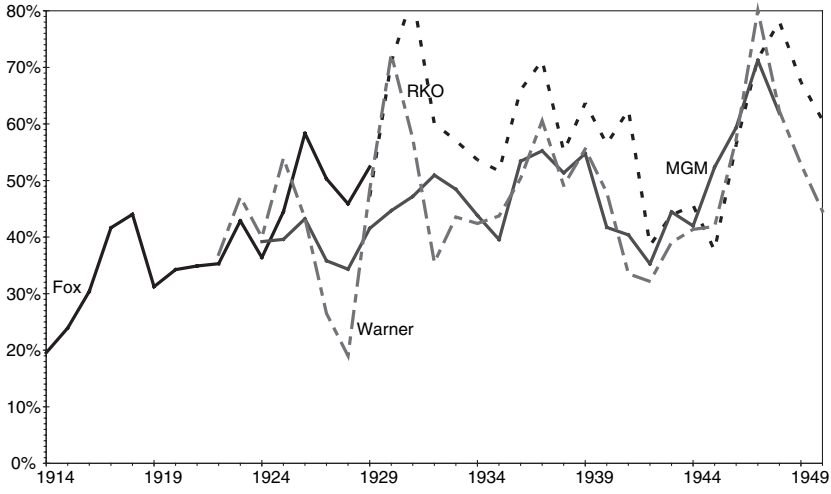

Figure 7.2 Average cost as percentage of gross rentals of three major US producer-distributors, 1914–1950
Source: Koszarski (1990: 85); Glancy (1992, 1995); see also Bakker (2001b).

expired or were invented around. Studios also attempted to reduce production costs because of the Depression, and shifted from large, highly differentiated portfolios, to focus on fewer and more expensive films.[10]

Columbia, a mini-major, rapidly increased the real average costs of its A-films during the 1930s, but kept the costs of its B-films about constant.[11] This is understandable, since the latter were often carried by A-films on a double bill. Thus increasing sunk outlays on B-films would, in general, not lead to an increase in market share. It was far more profitable to focus any increases solely on A-films. If the other studios adopted similar budgeting, their sunk costs will have increased a few times more than the average (in figure 7.1) suggests.

The studio with the highest relative cost, RKO, had the lowest absolute production costs. This suggests that the high-cost strategy of

[10] This last shift is discussed in Sedgwick and Pokorny (1998).

[11] A and B films got their classification from their budget and their character. A-films had a high budget, used the best studio resources and had to sell by themselves. They needed well-known stars and famous stories and were heavily marketed and advertised. B-films had a low budget, and during the 1930s often were the second feature on a double bill, in which the A-film drew the audience and the B-film was a 'free' extra. B-films had few stars, were based on cheap stories, and used slack studio resources, such as studio time during the nights, existing sets, exterior footage and music scores, and sometimes less successful creative inputs still under contract.

market leaders MGM and Warner was viable because the subsequent increase in sales *decreased* the production costs as a percentage of revenue. Again, this is not inconsistent with the sunk costs explanation. It indicates that it was profitable to escalate spending. So while high production costs may have seemed irrational to some, they led to a lower sunk-costs-to-sales ratio. Sutton (1998) observed the same in advertising-intensive food and drink industries, where market leaders incurred the highest absolute advertising costs, but had far lower, thus more 'efficient', advertising-to-sales ratios.

For Britain, little systematic data on sunk costs are available.[12] During the early and mid-1920s, average production costs figured at around £10,000–£12,000. After the coming of sound they rose to about £17,000 and in the late 1930s to £35,000.[13]

In 1928, new quota legislation, which set an annually increasing minimum quota of British films for distributors and cinemas, ignited a small boom in studio construction. British Instructional built a large new studio at Welwyn, which cost £60,000. It had one dark stage of 36,000 square feet. Whitehall Films built studios at Boreham Wood, Elstree, at a cost of £21,000 for the studio and £14,000 for equipment. Also in 1928, British Screen Productions bought a studio at Worton Hall for £19,000. In 1929, British Lion acquired a 7,200-square-foot studio at Beaconsfield for £52,785. It had been idle since 1922.[14]

In 1938, most capital per establishment was invested in studios (table 7.1). No less than twenty-three were active, with an average capital of £260,000. Nearly a hundred distributors had an average capital of only £10,000. This suggests that distribution costs were more exogenous. Capital invested in production companies was low, suggesting a flexibly specialised structure with many small firms renting studio space, and often obtaining finance from studios and distributors. The average production cost of films was about £28,000. Paradoxically, of all capital invested in the industry, film production took up only 3 per cent. This might partly be explained by the use of American imports.

Most capital was invested in cinemas. An important factor was the high real estate cost, since many cinemas were in city centres. Even in suburbs and small towns they were still located in high-value central areas.

When the Bank of England surveyed the film industry in the late 1930s, it obtained cost data for sixty-one films made between 1 January 1937

[12] For a comparison of the British and American film industries during the 1930s see also Sedgwick and Pokorny (2005).
[13] Amounts in 1927 pounds. Low (1971: 276); Dickinson and Street (1985: 131).
[14] Low (1971: 184, 220, 196–8).

Table 7.1 *Capital invested in the British film industry, 1938*

	Capital (£)	Companies (no.)	Cap./Comp.	Share (%)
Production:				
Studios	5,985,226	23	260,227	6.58
Production companies	1,760,000	88	20,000	1.94
Films produced	2,783,500	98	28,403	3.06
Laboratories	730,000	9	81,111	0.80
Sound technology firms	960,500	43	22,337	1.06
Total production	12,219,226	261	46,817	13.43
Distribution	985,600	98	10,057	1.08
Exhibition	77,750,000	4900	15,867	85.48
Total	90,954,826	5,520	16,477	100.00

Source: Wood (1986: 132).

and 30 June 1938. Total costs were £3,108,435, which amounts to an average of £51,000 per film.[15] This is a higher average per film and a lower number than table 7.1 suggests, indicating that smaller companies and cheaper films were not included. For thirty-one films, the Bank was also able to obtain detailed revenue data. Only the expensive films, with budgets above £36,000, had substantial overseas receipts, about 30 per cent of all net receipts, which is about the same foreign share of revenue as for the films of the Hollywood studios.[16] For films with a budget between £15,000 and £36,000 the foreign share of revenue was only 4 per cent, and for films with a budget below £15,000 the share was only 2.4 per cent.[17]

Of the films over £36,000, those up to £75,000 had foreign revenues of 19 per cent, and those over £75,000, 41 per cent. The only films in the sample which broke even were those with a cost below £15,000 and those with a cost between £36,000 and £75,000.[18] This is not entirely inconsistent with the escalation mechanism discussed in the preceding chapter: increasing expenditure on creative inputs and other quality-enhancing aspects could increase revenue disproportionately. Further, it suggests that a certain minimum expenditure was necessary to make films exportable.[19] The data are not inconsistent with a quadratic relationship, implying that doubling production costs quadrupled foreign

[15] Dickinson and Street (1985: 131). [16] See above. [17] *Ibid.* [18] *Ibid.*
[19] On the economics of the international film trade, see Chapter 9.

revenues.[20] The relationship is fraught with circularity, however, because high-cost films had to be crafted towards the international market in order to recoup costs, while low-budget pictures were free to focus more on the British market.

One company that aimed at the international market was London Film Productions, headed by Alexander Korda, a Jewish-Hungarian immigrant. Between 1932 and 1937 it produced eleven films at an average cost of £131,000, the highest of any British firm. Six films with a total production cost of £785,189 yielded net revenue of £896,239, a gross return of 14 per cent.[21] Only two made a profit, one broke even and the other three made a loss. *The Private Life of Don Juan* cost £93,710 and netted £210,000, a return of 124 per cent; *The Scarlet Pimpernel* cost £143,521 and netted £204,300, a return of 42 per cent.

For France, data on film production costs are sparse before 1940. In 1920 the median budget was probably 100,000 to 200,000 francs, between 20 and 40 per cent of the American figure, and the industry turned out between 80 and 100 features a year.[22] By 1922, this had grown to 130.[23] Expensive super-productions were also made. They cost between half a million and a million francs in 1920, and far more afterwards. Abel Gance took three years and three million francs to make *La Rose du Rail* in a studio outside Nice. The film was a huge success. In 1920–21, Jacques Feyder travelled to Algeria to shoot *L'Atlantide*, which cost two million francs and also was a hit.[24] Other super-productions were *L'Agonie des Aigles* (1921) and *Vingt Ans Après* (1923), which cost two million francs each; and *L'Empereur des Pauvres* (1922), which cost one million.[25] Costs increased throughout the 1920s. *Les Miserables* produced by Cinéromans during 1925 and 1926 cost no less than five million francs.[26]

One small and relatively successful company, Les Films Albatros, survived throughout the 1920s and 1930s – quite an achievement in the chaotic French production industry of the time, where most firms lasted only a few years, if at all. For twenty-six films the average production cost was 1,370,056 constant francs. Costs increased over time. The largest jump took place with the talkies, when Albatros focused on fewer, more expensive films.[27]

[20] If we take the mid-points of the ranges, and set the top group's average at £82,500, and assume gross revenue was three times the budget, a curve with power 2.2 or a quadratic function fits the four points well (R^2=0.96 and 0.99, respectively). This conceptual guess has, of course, no statistical meaning.

[21] *Ibid.*: 86. After interest costs returns were probably far less. On Korda's alliance with United Artists see also Miskell (2006b).

[22] Abel (1984: 17). [23] *Ibid.*: 21. [24] *Ibid.*: 18. [25] *Ibid.*: 21. [26] *Ibid.*: 31.

[27] See Bakker (2004b).

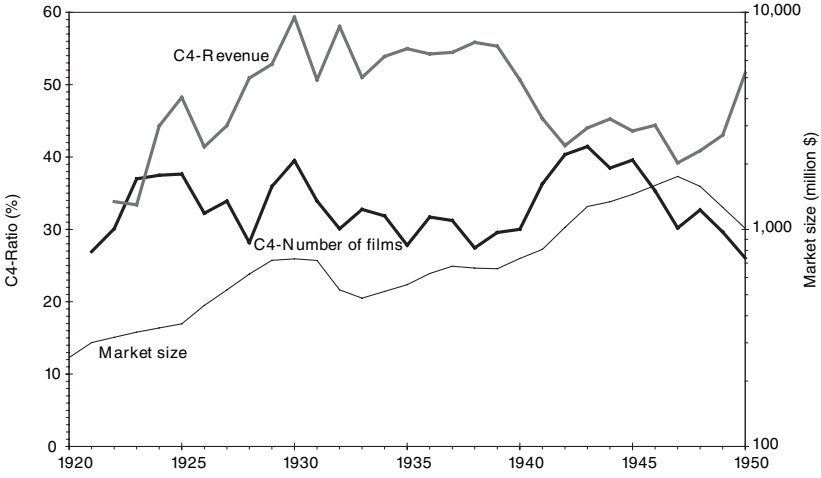

Figure 7.3 Four-firm concentration ratio in number of film releases, in dollar revenue, and market size, US, 1920–1950

Note: Foreign revenues are included in the C4-ratio for revenue, as they could not be disaggregated.

Source: calculated, including estimates from Finler (1992: appendix).

Throughout the interwar period production costs increased. According to one estimate, they rose from about 410,000 constant francs in 1923 to 1,923,000 in 1938, implying a real increase of 10.8 per cent annually.[28] This again suggests that the escalation of production expenditure continued after the 1910s.

Market structure: firms

In the US, the four-firm concentration ratio (C_4) of the number of releases fluctuated between 30 and 40 per cent after the 1910s. It did not show a clear pattern (figure 7.3). The C_4-ratio of dollar revenue, however, sharply increased, confirming the last chapter's finding that released negative length gave increasingly less information about actual market shares and market size. Two measurement issues affect the latter ratio. First, it is based on total revenues including foreign revenues, which could not be disaggregated, over the size of the US market. It will therefore be a bit higher than the actual ratio. Part of the 1920s' increase was probably caused by growing foreign revenues, and the sharp fall and rise between 1939 and 1950 was possibly entirely due to the loss and

[28] Figures in 1927 francs (Crisp 1993: 16).

regaining of foreign markets. Second, the revenue measured includes revenue from film production, distribution and from cinemas owned by the studios. An increase in vertical integration, as happened during the 1920s, would thus lead to an increase in concentration.

For 1939 and 1946 the actual market shares in film distribution have been traced, yielding a C_4-ratio of 62.4% of all gross rentals in 1939 and 56.4% in 1946.[29] These compare to ratios of 55.3% and 44.4% for total revenues (figure 7.3). The difference suggests that distribution was more concentrated than distribution and exhibition combined. Second, the 1939 and 1946 figures for film distribution suggest that the fall in concentration (indicated in figure 7.3) was not entirely due to a loss of foreign revenues. The C_8-ratio, the share of the five major producer–distributor–exhibitors and the three 'mini-majors' remained surprisingly high. In 1943–44 it was no less than 94 per cent of all US gross rentals.[30]

During the 1920s, concentration almost doubled, from 34% in 1922 to 60% by 1930, coinciding with rapid market growth. Concentration increased fastest between 1925 and 1930, when the market also expanded rapidly. This might have been partially driven by forward integration and increasing foreign revenues. This synchronous increase in market size and concentration is not inconsistent with Sutton's theory on endogenous sunk costs and market structure. Instead of market growth leading to many new entrants, thus pushing down the concentration ratio, it instead led some film companies to escalate their spending further, as well as to integrate forward into exhibition, thus gaining a larger share of a larger market. The increase in concentration until 1929 suggests that the escalation phase that started between 1915 and 1917 did not stop, but continued throughout the 1920s, with a similar relation between market size and concentration.

An important instigator of growth was the coming of sound in 1927. This initially increased entry costs, as it was difficult and risky to implement at first, and much of it was protected by exclusive patents. After a few years, the technology became cheaper, standardised and widely available, and patents were licensed broadly and cheaply, making entry less of a problem. Nevertheless, sound initially only constituted an endogenous sunk cost used to increase quality to draw a larger audience, and to reduce the cost of live accompaniment. When sound film had become the standard and was not merely a choice, it became an exogenous sunk cost. Film producers could not choose between producing sound or silent films, as the latter had become practically unsellable.

[29] Calculated from Conant (1960: 44–6). [30] *Ibid.*

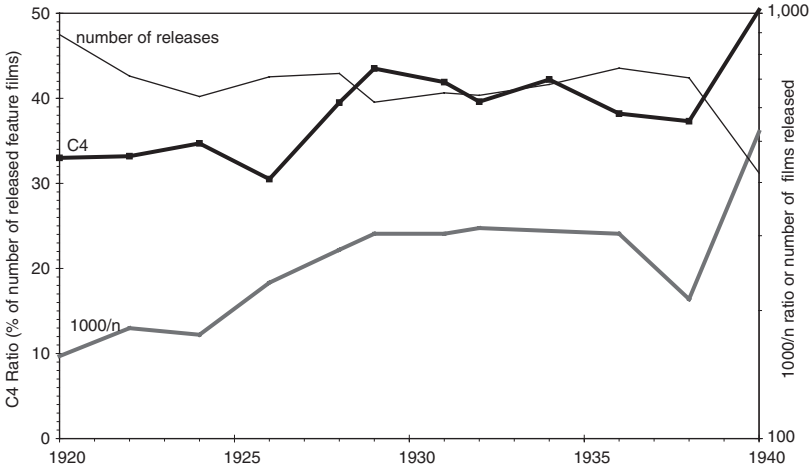

Figure 7.4 Four-firm concentration ratio, l/n ratio and total number of feature films released, Britain, 1920–1940

Note: The four-firm concentration ratio refers to the share of the four largest firms in the number of total releases, not in total box office revenue, as that data are unavailable.

The 1/n ratio is scaled up here to the 1,000/n ratio, which is 1,000 divided by the number of companies in the market.

Source: compiled from Kinematograph Year Book, surveys of films trade-shown during the year, 1920–1940.

During the 1930s, both concentration and market size remained stable over all.

Concentration in the British market showed a similar pattern (figure 7.4). In 1919–20, the C_4-ratio among distributors was 33%, while the number of firms was sixty-four. In 1925–26 the figures were 30% and forty-three firms. By 1928, concentration had increased to 40%, and the number of distributors decreased to thirty-six.[31] Unfortunately, for the entire interwar period only the C_4-ratio of the number of films can be calculated, probably understating actual concentration. During the early 1920s, concentration remained stable, to rise sharply from 1926 onwards. Increased exogenous costs because of the talkies may have been a factor.[32] During the 1930s, concentration remained stable again. The jump in 1940 was probably caused by the war and

[31] Calculated from Low (1971: 71–5).

[32] Production costs also mattered for distributors, because they often provided minimum guarantees, which film producers then discounted at a bank. A guarantee's size was related to budget size.

consequent government intervention in the allocation of production and distribution facilities and the personnel necessary to operate them. This may have led to the closure of smaller firms.

John Sedgwick (2000) has closely examined the films released in Britain between 1932 and 1937, using a sample set of representative cinemas to calculate the number of screenings per film. This will not perfectly reflect the revenue per film, as the latter depended on the cinemas – for example, on whether they were city-centre or small neighbourhood cinemas. Further, the British Quota Act forced exhibitors to reserve screen-time for British films, which sometimes led to the booking of these quota-films on weekday mornings and during bad times in the year. Tickets sold per screening also varied widely between films.[33] Nevertheless, the number of screenings still remains a substantially better proxy than the number of films.

Sedgwick's figures show that for 1932–37, the C_4-ratio of producers in films released was 30%. The C_4-ratio in the total number of screenings, however, was 44%.[34] This suggests again that concentration in the number of releases understates actual concentration. The reservations above suggest that actual concentration may have been higher still than that based on screenings. The 44% above compares with a US C4-ratio of about 50% for 1932–37.[35] The top four firms in Britain all were American studios.

Since Sedgwick's figures are on film production, they are not fully comparable with the figures on distribution in figure 7.4. Nevertheless, the C_4-ratios lie in the same ballpark: 44% in production versus 40% in distribution.

In exhibition, the C_4-ratio increased markedly, from just 3% in 1927 to 21% in 1939 (figure 7.5). Despite a sharp jump in the late 1920s, concentration was still about half that in the US, where it was 15% in 1931.[36] Between 1935 and 1937, concentration jumped again, from 11 to 18 per cent, on or above American levels. In revenue terms, concentration must have been markedly higher, as the leading circuits owned the high-class first-run cinemas in city centres and left the small neighbourhood and country cinemas to independent exhibitors or smaller circuits.

Tables 7.2 and 7.3 give insight into market entry. Table 7.2 shows that most entry happened in production and exhibition. Nevertheless,

[33] See, for example, tickets sold per film in Granada cinemas during 1936, examined in the next chapter.
[34] Calculated from Sedgwick (2000: 91–2). [35] See figure 7.3.
[36] *Film Yearbook* (1932); Lewis (1933: 345); Conant (1960: 27). In 1945, the US C_4-ratio was possibly a few percentage points higher.

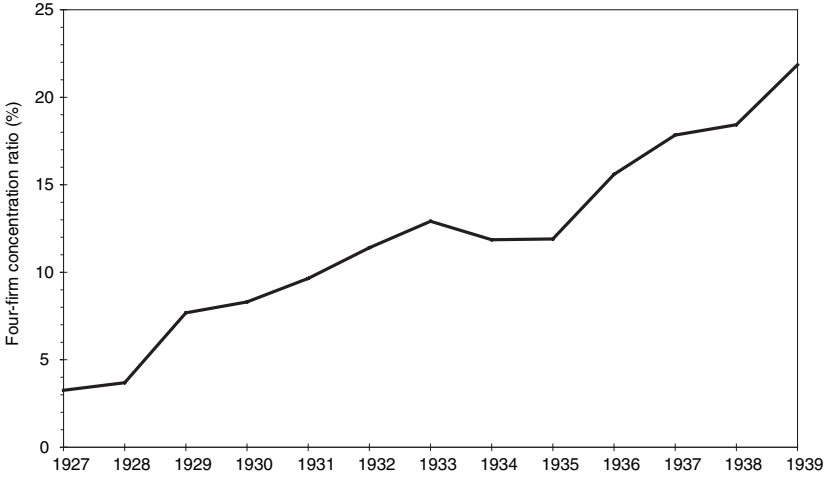

Figure 7.5 The share of the four largest cinema circuits of total cinemas in Britain, 1927–1939
Source: calculated from Wood (1986: 119).

Table 7.2 *New companies connected with the film industry registered in Britain, 1927–1938*

Year	Production	Distribution	Exhibition	Misc.	Total
1927	26	17	143	29	215
1928	37	16	94	25	172
1929	59	3	150	58	270
1930	36	4	176	48	264
1931	55	5	174	49	283
1932	46	7	212	38	303
1933	64	6	222	57	349
1934	86	10	251	68	415
1935	108	13	226	64	411
1936	94	7	196	47	344
1937	73	7			
1938	69	7			

Note: 1936 figures are for the first ten months only, except Production, which covers the full year. Exhibition and miscellaneous figures are not known for 1937 and 1938.
Source: Klingender and Legg (1937); *Kine Weekly*, 12th January 1939; Wood (1986: 125).

Table 7.3 *Number of new companies founded in the British film industry, 1936–1938*

	Year			
Company type	1935	1936	1937	1938
Production	88	94	73	69
Distribution	1		7	7
Finance		2	7	
Studios	4	5	6	1
Laboratories	1	1		1
Recording studios				1
Stills studios				1
Colour companies			3	
Newsreel companies			1	
Total	94	102	97	80
Capital involved (£)	1,070,390	2,102,500	769,100	199,760
Average cap./co. (£)	11,387	20,613	7,929	2,497

Source: Kine Weekly, 6 January 1938 and 12 January 1939; Wood (1986: 125); Sedgwick (2000: 244).

concentration did not decrease, indicating that new companies held small market shares. Entry in distribution was more limited. This was undoubtedly due to the higher exogenous fixed costs. Table 7.3 shows that average investment per new firm doubled from about £10,000 to £20,000 from 1935 to 1936, and then collapsed in a big bust: many production companies were not able to recoup their production costs.[37]

During the 1930s one vertically integrated firm came to dominate film production and had large interests in distribution and exhibition: the Rank group, assembled in several mergers by flour magnate J. Arthur Rank.[38] Despite frequent problems, the firm was better able to compete with the Hollywood studios than the major French companies.[39]

For France the only concentration indicator available is the market share of distributors (table 7.4). In the late 1920s, the C_4-ratio lay between 25 and 30 per cent, but then fell until 1933. The fall was caused by the talkies, which resulted in more new firms producing French films, driving up the market share of French films (figure 7.8, below) and by many different formats being tested. After 1933, the market stabilised

[37] See, for example, Dickinson and Street (1985). [38] MacNab (1992).
[39] See below. In Germany, from the late 1920s, UFA came to dominate film production and distribution, backed by Alfred Hugenberg, a supporter of the Nazi party (Kreimeier 1992).

Table 7.4 *Four-firm concentration ratio in feature film releases, France, 1925–1934*

Year	C4-ratio	No. of films (1925 = 100)
1925	26.4	100
1927	30.8	116
1928	29.5	100
1929	30.2	75
1930	25.7	109
1931	22.7	95
1933	17.3	126
1934	32.6	76

Note: 1925 concerns the season 1925–1926.
Source: La Cinématographie Française 1925–1934, December issues.

and concentration rose. In 1934, the top US distributors all released films in three different formats: dubbed versions, French-acted versions produced in the US, and original US versions, sometimes with French subtitles.[40] Eventually, dubbed versions became the standard.

After several mergers, two large distributors–exhibitors emerged that dominated the industry: Gaumont-Franco-Film-Aubert (GFFA) and Pathé-Nathan. Both companies financed film production, often by renting their studios to independents and guaranteeing distribution, not unlike the Hollywood studios would be doing from the 1950s onwards. However, the French studios could not get sufficient films for which they held full exclusive rights. Part of the rents from copyrights were therefore captured by other upstream companies. Both firms went bankrupt in the early 1930s and were managed by administrators of the French government until the Second World War.[41] From the late 1920s the US studios all had their own distribution network in France.[42]

Market structure: countries

In the US, the number of foreign films distributed started to increase again. In 1927 they constituted only 10% of all releases, by 1938 they had reached almost 40% (figure 7.6). Nearly all were released by independents, and generally were just shown in a few cities or states for a short time in the smaller cinemas. They must have generated little

[40] If the same title appeared both dubbed and in the original language, it is counted only once.
[41] Crisp (1993: 29–32). [42] See table 7.5.

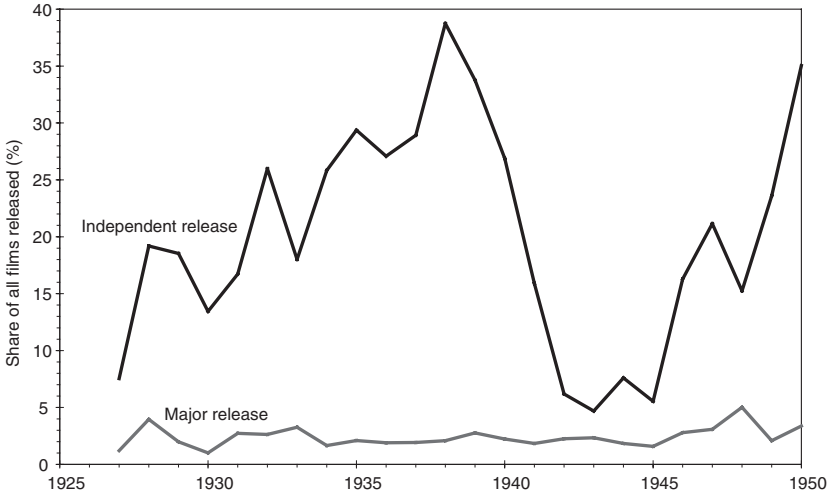

Figure 7.6 Share of foreign films in US releases, by major and independent distributors, 1927–1950
Source: calculated from Finler (1992: appendix).

revenue, as the five majors and three mini-majors received about 95 per cent of all distribution revenues in the late 1930s.[43] But for independents working around the Hollywood cartel foreign films probably were a valuable source of freely accessible supply.

Foreign films released by majors fluctuated between 1 and 3 per cent, in exceptional cases reaching 4 or 5 per cent. The share in revenue was probably lower, as foreign films often did not get a wide release, and sometimes were only distributed to appease foreign governments and industries.

Government intervention was limited. In the 1920s, public pressure led to the formation of the Motion Picture Producers and Distributors of America (MPPDA), which issued guidelines for film content, to preempt possible legislation. Films without MPDDA-approval could hardly be distributed.

The US government did help to defend Hollywood's interests abroad, as it did for other American industries. In the mid-1920s, the US Department of Commerce set up a Motion Picture Division, which gathered information on foreign markets for American film companies, and advised other departments on trade negotiations. The US government always assertively defended Hollywood's interests in international

[43] Huettig (1944).

trade negotiations. This somewhat alleviated the effects of increasing protectionism for American companies. They therefore suffered less from protectionism than exporting European film companies.

The evolution of the British film market in the interwar years was defined by the quota legislation of 1927. This required exhibitors and distributors to offer a certain percentage of British films, starting at 5 per cent, but increasing annually to ultimately reach 25 per cent. The arrangement was for ten years only, but in 1937 new, similar legislation was introduced. Before 1927, British films were a mere 4.5 per cent of all releases. Contemporary estimates put their share in total screenings in the same range, at below 5 per cent.[44]

The quota triggered a growth spurt in British production. A substantial part consisted of 'quota-quickies', films made cheaply, and shown at disadvantageous times, such as matinees, in nearly empty cinemas, to fill the quota requirements. More high-budget films were also made. Sedgwick (2000: 91–2) shows that while the US distributors generally kept strictly to their quota and made most use of quota-quickies, British distributors released more British films than the quota required, and invested more in high-budget films.

Not surprisingly, the British share increased towards the percentage prescribed (figure 7.7), and the share of US and other countries decreased. The latters' share imploded from 14% to about 3%, while the US share only declined from 80% to about 70%. This suggests that US firms, helped by their government, were better able to defend their market share in Britain than other, mainly French and German, firms. In revenue terms, the US market share might not have decreased at all. The American studios adapted their export strategy, exporting fewer B-films, filling their quota – which could be at most 75 per cent – with expensive, star-laden movies that would generate the maximum possible revenue.[45] The British market share stayed around the quota requirement, suggesting that while the quota did guarantee a certain domestic supply, it hardly triggered a take-off of the British film industry into self-sustaining maturity. Sedgwick's data on screenings are consistent with this: British films accounted for 24.6 per cent of all screenings between 1932 and 1937, nearly perfectly matching the quota requirement. The principal British studios accounted for 14.8 per cent, secondary studios for 4.3 per cent, and remaining occasional producers for 5.5 per cent.[46]

Sedgwick's data also suggest that protectionism achieved a growing domestic market share more by driving out other European films than

[44] Political and Economic Planning (1952: 294). [45] Vasey (1997).
[46] Sedgwick (2000: 91–2).

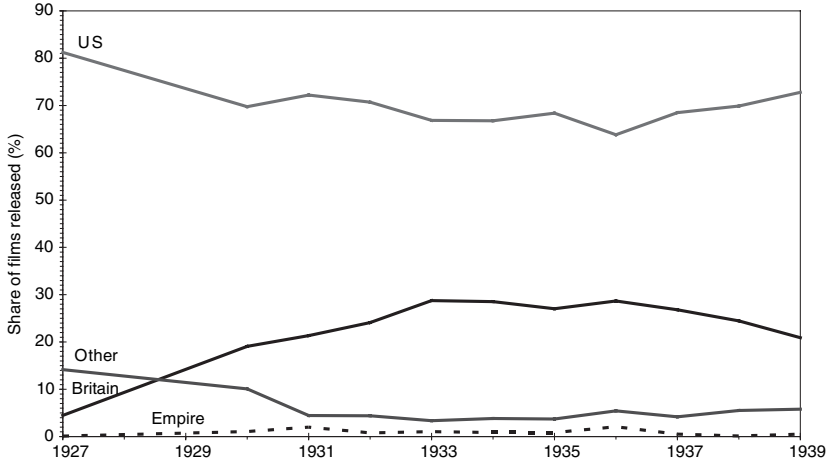

Figure 7.7 National origin of films released in Britain as share of total releases, 1927–1939

Source: The Cinema's Annual Surveys, 1927-39; Wood (1986: 117). For precise numerical values, see Bakker (2001b: 398).

significantly reducing the American presence, whatever the rhetoric. Other European films' revenue-shares must have been even lower than their number, since they only held a mere 1.27 per cent of all screenings between 1932 and 1937.[47]

In France, the US share also fell during the late 1920s (figure 7.8), but far more deeply, to about 50 per cent. This happened between 1926 and 1929, before the talkies arrived in France, and can be explained by the introduction of import quotas for films.[48] Initially, German films took the place of US pictures, but between 1929 and 1931 the French market share increased sharply. Besides protectionism this was caused by the early talkies, which made French films more and foreign films less popular. Even after dubbing problems were solved, French films remained permanently more popular, compared to their dire situation in the 1920s.[49] From 1934 onwards, their share stayed about 30 per cent.

Britain's French market share was substantial, probably because of its quota policy increasing the number of British productions. The share of other European films is markedly higher in France than in Britain. Italy

[47] *Ibid.* [48] See, for example, Ulf-Moeller (2001).

[49] Bakker (2004b) shows how domestic revenues of one French production company sharply increased with the coming of sound. It became almost possible to break even in France, but foreign revenues sharply decreased.

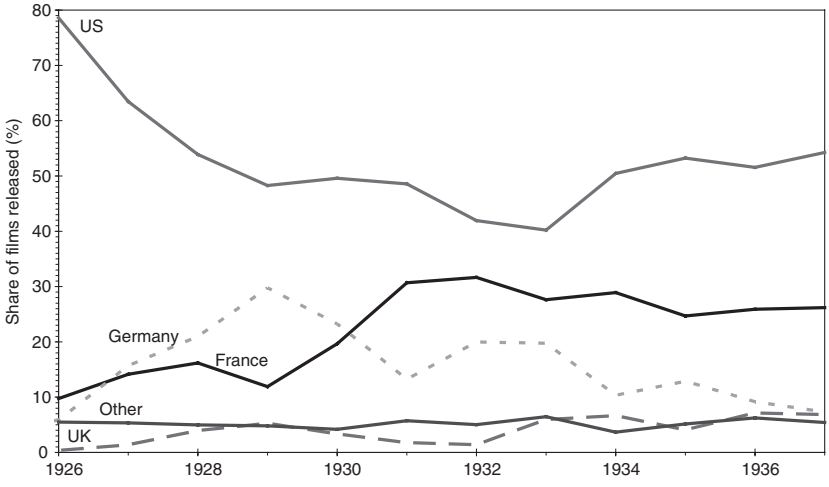

Figure 7.8 National origin of films released in France as share of total releases, 1926–1937
Source: Bakker (2001b: 398).

and Spain, but also Denmark, Sweden and Russia, held large market shares relative to the modest size of their industries.

The failure to catch up

In the interwar period, then, market size continued to expand in the US, Britain and France, partially driven by the new sound film technology. The Depression only halted growth for a few years. Likewise, in all three countries, sunk costs continued to rise. In the US market, concentration increased until the late 1920s. In Britain and France, the evolution of concentration showed a mixed pattern. Building on the findings above, this section gives seven general reasons why European film companies did not manage to catch up.

As noted in the previous chapter, as market size became more important for film production, the European home market disintegrated. While this was the main reason for Europe's failure to catch up, contributing factors existed. At the firm level, strategic-managerial factors were first-mover advantages in film production and distribution, and collusion. An economic factor firms faced was the large gap in sunk costs. At the industry level economic factors were increasing agglomeration benefits in Hollywood and the introduction of talking pictures. More strategic-emergent factors at the industry level were the use of the

national origin of films as a quality marker and protectionism. These factors will be discussed below.

First-mover advantages

Hollywood's first-mover advantages in feature film production and distribution can be broken down into the offering of complete film portfolios to cinemas and in the setting up of national and international distribution networks. These will be discussed in turn.

Once the Hollywood studios had set up their subsidiaries, it was difficult for European companies to enter. First, the Hollywood studios could offer their films in large blocks. The largest companies made over fifty films a year, and were thus able to supply new films on a weekly basis. Since films were copyrights from which rents could be captured, this scale made a difference compared to an independent distributor offering the same number of films, but from a variety of suppliers. In the second case, the distributor would capture part of the rents from the copyright, while in the first case, the producer–distributor captured all rents.[50] Moreover, the producer–distributor could offer cinemas a reliable contract for a block of films, thus claiming most screen-time up-front and making it more difficult for competitors to book the cinema. An independent distributor could contract many films from small producers and then block-book and blind-bid those to cinemas, but faced the risk that producers would not deliver, and the consequent damage to their reputation: cinemas would wonder if films of the agreed quality would arrive at the agreed time.[51]

Second, because they were the first to escalate sunk costs, the emerging Hollywood studios had a certain number of high-quality films with famous stars and based on famous stories, which they could use in two, mutually reinforcing, ways. They could use the star films to rent their whole output of films, including films of lesser quality, or films that had failed in the first week. Because they 'owned' many star creative inputs and had a history of guaranteeing a minimum quality, they could also book films before they were even finished, a practice called 'blind-bidding', using stars and stories to give the cinema-owner a rough guarantee of the quality of the film.

Third, since the emerging Hollywood producer–distributors did not have to share the rents of their copyrights with independent distributors, they were in a better position to offer cinemas part of the rents through lower rental prices. Although dumping was only just possible for films

[50] See above. [51] See also Kenney and Klein (1983), Hanssen (2000).

and other media products, as the marginal costs were practically zero, and it was thus difficult for a producer to charge a price below marginal cost, if competition from local distributors in the US and in foreign markets made it necessary, the Hollywood studios could decrease their rental prices, until the local distributor stopped competing directly.[52]

For the cinema, what mattered was not the rental price of the film, but the rental price per film ticket sold. This meant that low prices only mattered when quality of films was comparable, otherwise the effect of the lower price would be counteracted by the lower number of tickets sold. The percentage contract was a solution for this information problem, because it was hardly possible to make an objective quality measure for a movie.[53]

Production companies, in their turn, needed guaranteed access to distribution for two reasons: first, screen-time was a scarce resource. Most revenue was made in a few (holiday) weeks, when screen-time was in short supply.[54] A company that did not have access to enough screens during the short but essential periods around Christmas, Easter, July 4th and Thanksgiving would find it difficult to survive. Therefore, in order to export profitably, a film studio had to have its own distributing agency in important foreign markets. Second, films were essentially copyrights, not products, and by having an independent distributor, a film producer would let that distributor capture part of the rents. Also, this 'hold-up' situation would result in both parties having insufficient incentives to maximise film revenue because the other could capture the rents. A proprietary distribution network maximised the rent captured.

The above hampered the distribution of European films in the US. Price competition was not an option, as what mattered was not cinemas' (ex-ante) rental cost of a film, but the (ex-post) cost per film ticket sold, and the latter depended partially on film quality. So while in other industries, prices could be lowered until the product sold, even at a zero price, cinemas' average costs for low-quality films might be substantially higher than for high-quality films.[55] The same happened internationally: the emerging Hollywood studios entered international film distribution

[52] Ulff-Moeller (1998) finds that in France this mattered most for the smaller cinemas outside of metropolises such as Paris and Lyon. They largely relied on relatively cheap American movies.

[53] See also Caves (2000). Also, since screen-time was scarce and capacity fixed, the cinemas kept prices for the public about constant, to maximise tickets sold. Prices varied according to time of day or day per week or location, but seldom varied between films.

[54] Sutton (1998: 197–230) makes a similar argument for distribution of pharmaceuticals. See also Caves (2000).

[55] This was driven by cinema fixed costs. See Bakker (2004b).

just as European companies left it.[56] Eventually they had their own direct distribution subsidiary in each major film market. This guaranteed access to foreign screen-time and maximised foreign rents captured.

European firms were at a disadvantage since they lacked foreign distribution networks. The exception was Pathé, which, until the early 1920s, was one of the largest distributors in the United States and had several other foreign distribution subsidiaries. The fact that Pathé was the only company that had managed to keep a considerable and profitable presence in the American market during the war, confirms how essential distribution networks had become in exporting films.[57] However, at the time American companies were setting up their international networks, Pathé started selling its foreign subsidiaries (table 7.5).[58]

After the First World War, European film companies left international distribution, just as many US companies entered this activity. Nordisk was forced to sell part of its German distribution and exhibition network in 1917, and after the war sold its remaining stake. By that time, it had also left its other foreign markets, such as Switzerland, Austria, France, Britain and the US. Pathé sold most of its foreign distribution subsidiaries in the early 1920s, as did the French Gaumont company.[59]

Initially, several domestic European producers made substantial profits distributing American films, because they could capture part of the rents. Gaumont, for example, left direct involvement in French film production, limiting itself to financing other companies, and concentrated on distribution. In 1925, it set up a distribution joint venture with MGM, Gaumont-Metro-Goldwyn, which yielded huge profits to Gaumont – until 1928, when the venture was disbanded and MGM set up its own distribution company.[60] A similar thing happened in Britain, where MGM initially distributed through Jury-Metro-Goldwyn.

Documents from RKO show that revenues were higher in countries where this studio had its own distribution, underlining the importance of owning foreign distribution networks. In correspondence between RKO headquarters in New York and the Los Angeles studio, in 1932, a manager stressed this importance when he reported the revenue of

[56] Bakker (2000a: 240).

[57] Pathé 's competitor Gaumont, for example, had difficulties in getting US distribution access. Not an MPPC-member, it initially released through the MPPC's George Kleine. When the trust's power waned, in 1913 and 1914 Gaumont released films itself, but also tried to become a trust member to secure a guaranteed distribution outlet. After that failed, Gaumont's films were distributed sometimes by others, either nationally or through 'states right releases' (analysis of weekly release schedules in *Moving Picture World*).

[58] On the sale of its American subsidiary to Merill Lynch see Perkins (1999: 94–100).

[59] See the preceding chapter.

[60] Crisp (1993: 29).

Table 7.5 *Chronology of direct foreign distribution subsidiaries set up by French and US companies, 1902–1927*

Name of film company	Country								
	US	Canada	Britain	Australia	N.Zealand	France	Germany	Italy	Sweden
French companies									
Pathé	1908–1921		*1904*	*1909*	*1909*		1912–1914	*1909*	1910
Gaumont	1908–1920		1902				1907	1908	
Éclair	1912–1917		1913				1912–1914		
American companies									
Thanhouser						1914			
Essanay			1915						
American			1916						
Paramount			1920	1917		1921	1925		
Universal			1922	1921	1921		1926		1923
Fox		1919	1916			1919		1919	1924
MGM			1927			1925	1925		1923
Vitagraph		1925	1916			1913/1919			
Warner									1927
First National						1925	1927		1923
United Artists			1921	1921		1921	1925		1922
Producers Distr. Corp			1925						

Note: underlined dates mean the foreign distribution subsidiary was purchased instead of set up.
Dates in italics mean that this is the earliest date the subsidiary is mentioned in the sources, but that it may already have existed for some time before. The list of countries is not complete.
MGM in Sweden 1923: Metro Pictures, one of the predecessors.
Source: Company reports Pathé, Gaumont, Éclair, 1900s–1920s; Bjork (1995); Thompson (1985, appendix).

Roadhouse Murder. The US and Canadian gross rentals amounted to $182,000, and foreign revenue to $39,000. The manager wrote: 'Probably I should add that when this picture was made we did not have our own exchange distributing facilities abroad except in the United Kingdom, Australasia and Panama. Under present day conditions the foreign gross would probably be somewhat greater.'[61]

The question, then, remains why the European film companies did not simply do the same as their American counterparts did and set up international distribution networks. While every single European market, except possibly for Britain, was not essential to the US studios, the US market was of vital importance to the recovery of the European film industry. Several European companies tried to imitate the American strategy, and tried to set up a US distribution subsidiary. Already in the early 1920s, before Pathé and Gaumont exited the US, the foundation of the French Franco-American Cinematographic Corporation was announced, with 300 million francs of capital. The company was supposed to produce French films specifically for the American market and to distribute those films in the US. The venture was supported by Henri de Rothschild, André Citroën, the Minister of Education and the director of the Comédie Française. However, the company dissolved before it could start operations when its secretary, André Himmel, was arrested for fraud.[62]

In the mid-1930s, Gaumont-British, the main British producer–distributor–exhibitor, set up its own distribution company in the US, which for a few years distributed Gaumont-British films in the US. However, the subsidiary failed to make a profit and was eventually closed.[63] J. Arthur Rank, who later bought Gaumont-British, acquired a 25 per cent stake in the Hollywood studio Universal, not only to secure American films for his British cinemas, but also to get better US distribution access. Although every year a handful of often popular, successful British films were distributed in the US, British films did not manage to get a substantial market share.

The European attempts failed because, out of the companies remaining after Gaumont and Pathé had left international distribution, the American ones had been first to set up foreign distribution networks. They already controlled part of the access to screen-time, and preemptively booked their films in blocks. Further, after the US companies

[61] The film was released on 6 May 1932. Letter from W. H. Clark, RKO Radio Pictures Inc., New York, to J. R. McDonough, RKO Radio Pictures Inc., Los Angeles, April 7, 1932. Letter reproduced photographically in Georget (1979: Annexe 55).
[62] Crisp (1993: 16). [63] See, for example, Sedgwick (2000: 211–229).

had gone through the first escalation phase and gained their initial advantage, the resulting gap in sunk costs between European and Hollywood companies must have made it increasingly difficult for the former to obtain the capital to set up an international distribution network.

European film companies also tried to change the circumstance that the US was the largest film market, by integrating the European film market. The idea was that European companies should increase the size of their domestic market to be able to compete internationally, by way of mergers, joint ventures, co-productions and distribution deals. The ideal was that a film producer anywhere in Europe would have access to the whole European market.[64] In the late 1920s, production and distribution companies of several European countries indeed made co-productions, in which the member in each individual country guaranteed fast distribution access and widespread promotion.[65] Nevertheless, the 'Film Europe' movement failed, probably because it concerned mostly ad hoc co-productions and not mergers or a deliberate strategy. Also, the fact that the German, Italian and Spanish film industries came under fascist control greatly hampered success of the strategy to recreate a European home market.

Collusion

From the mid-1920s five large producer–distributors – Paramount, Metro-Goldwyn-Mayer (MGM), Fox Film Corporation, Warner Brothers and Radio-Keith-Orpheum (RKO) – and three smaller ones – Universal, Columbia and United Artists – dominated international film distribution. In the 1943–44 season, 97 per cent of US film rentals were collected by the ten largest distributors, of which these eight major Hollywood studios collected about 90 per cent.[66] During the 1930s the figure was probably within the same range.

From the late 1920s onwards, when they had to meet regularly to discuss sound film standards, these studios formed an oligopoly. The five majors had divided up the US exhibition market in geographic zones for each member, and showed each others' films in each others' cinemas.[67]

Taken together these theatres generated the large majority of the film revenue in the US. Since they all showed each others' films, little

[64] Thompson (1993).
[65] A few examples are discussed in Chapter 9 and in Bakker (2004b).
[66] Conant (1960: 118). [67] Douglas Gomery (1975).

screen-time was left for films from other companies, be it American independents, or European film companies.[68] Most European films were therefore distributed through independent distributors, which reached cinemas that taken all together, accounted for only a small part of US revenue.[69]

In foreign markets, the eight Hollywood studios colluded openly, making use of the Webb-Pommerene Act (1918) that enabled US companies to form export cartels.[70] When in the late 1920s, France wanted to adopt strict and limited quotas for the number of films that could be imported, the Hollywood studios stopped supplying the French market for four months, after which the legislation was modified. The Hollywood studios were able to do this because together they held such a large market share that cinema owners and distributors could not do without American films. The latter groups lobbied heavily with their government to limit protectionist legislation. In similar fashion, the Hollywood studios withheld supply from the Italian market in the late 1930s, and from the British, French, Dutch, Danish and several other European markets in the years following the Second World War.[71]

The gap in sunk costs

Another firm-level obstacle to a European catch-up was that, after the war, the gap in sunk costs was already too high. In the US market, production costs had escalated several times, and many companies had disappeared. To catch up, European companies would have had to make a single jump in costs of a size no US company had made. Also, European financial markets were less experienced and less willing to supply the film industry. European government reports mentioned lack

[68] It was in the Hollywood studios' interest to distribute films to which they held the copyright, or those of competitors who gave reciprocal distribution access. Few European distributors could bargain in this way. They lacked a sufficient supply of high quality copyrights that could be leveraged.

[69] See figure 7.6, above.

[70] Guback (1974). On the Webb-Pommerene Act's economic implications see Scherer and Ross (1990: 324–5).

[71] Vasey (1997: 192); Jarvie (1983, 1986). Where the Hollywood studios encountered a government, as in Britain or France, they were often successful, where they encountered cinemas or local distributors the record was mixed. The Dutch association of cinema owners, for example, rejected new renting contracts, and the Hollywood studios stopped supply. Immediately foreign films suddenly became something of a fashion. Newspapers wrote what a relief it was to see so many nice films from elsewhere, and cinema owners organised an effective promotion campaign for foreign films, forcing the Hollywood studios to end their boycott (Hofstede 2000: 116–23).

of finance as the main problem and proposed national film banks. Faced with small home markets, most European companies had to recoup costs through exports, and these revenues always came in later and more slowly than domestic revenues, thus further increasing the gap.

The companies which were first to escalate their outlays on film production took substantial risks.[72] Many of them went bankrupt. The few that survived eventually became part of the eight Hollywood studios, most of which still exist today. As argued in the previous chapter, because of an unfortunate historical circumstance – the First World War – all the companies that escalated their sunk costs were inside the American market. This did not mean that the companies that lost out, apart from the escalators that went bankrupt, were all inside the European market. The few successful film companies, all located in Southern California, actually beat not just one, but four groupings of companies: the European film industry, the old American film industry on the East Coast, the many Californian companies which joined in the escalation of sunk costs but failed, and finally, the newly emerging film industry in Florida.[73]

The companies that increased their sunk costs ran substantial risks at each individual step – at each new film with a higher budget, each new star or director signed for an astronomical sum, each new story bought for an unprecedented amount. The European companies that had not taken part in the escalation phase starting between 1915 and 1917 found it difficult to catch up. Joining the 'escalators' by taking the individual steps would have been risky enough, and would have resulted in many bankruptcies. Taking all the individuals steps together in one large jump in sunk costs would have been even more risky. A company planning to do this could not use previously proven success to gain the confidence of bankers,[74] had no retained profits out of previous films it could invest, and lacked a continuing revenue stream from a portfolio of movies to provide cash flow as new movies were being produced.[75]

Besides the fact that the American companies were first, they had the added advantage of a large home market, which made it possible to recoup production costs quickly. European companies would face a

[72] See, for example, Wasko's (1986) study of D.W. Griffith's finances, one of the first producers to escalate production costs.

[73] Nelson (1980).

[74] Investment in production companies without proven track records was a major cause of the collapse of investments in British film companies in 1937 (see below).

[75] See, for example, Saunders (1923, 1924). For an overview of present-day methods of film finance see Sarrazin (1985).

delay in receiving revenues from foreign markets, which would result in a higher cost of capital.[76]

One could argue that perfectly working markets would provide enough capital to the European producer to make all the steps in one large jump. In practice, however, given all the above, for a banker who could choose where to put his money, the perceived risk would have been substantially higher in Europe than in the US.

Because the American companies were first, they could also count on bankers who had more knowledge about the film industry and more experience in film financing. The Bank of America in Los Angeles, for example, specialised in financing the film industry. Investment bankers Merrill Lynch made a substantial part of their fortune by investing in a film studio.[77] In 1919, Kuhn, Loeb & Co. sold a $10 million-issue of preferred shares in the Paramount Famous-Lasky Corporation. In the early 1910s, the John F. Dryden-Prudential Insurance group had backed the Fox Film Corporation, and Goldwyn Pictures was backed by the DuPont family and by Chase National Bank. Warner Brothers financed its expansion into sound films with securities underwritten by Goldman, Sachs, and Company.[78] Most of the large Hollywood studios made frequent use of the stock market as a source of capital.

When European governments started to examine the conditions of their film industries carefully, many identified the lack of access to capital and financing as a major problem. In several countries, industry groups advocated the idea of a film bank, an entity run by representatives of the industry and the state, which would provide the necessary finance to film producers. In both Britain and France the idea was not carried further, but Nazi Germany did found a Film Kredit Bank, which financed film production.[79] The system of subsidies and loans awarded by state and industry committees which became popular in most Western European countries after the Second World War, thus had its origin more in the Goebbels-model of film financing than in the British or French examples.[80]

[76] US companies had better track records and larger cash flows because they were first, shorter recoupment periods because they were inside the largest market, and less borrowing compared to assets and cash flow.

[77] Wasko (1982); James and James (1954: 245–7, 429–30); Perkins (1999: 94–100).

[78] Conant (1960: 25–6).

[79] Sayers (1974: 538, 550); Dickinson and Street (1985); Jeancolas (1983); Muhl-Benninghaus (1989).

[80] A fact which Putnam (1997), a British producer sceptical about state involvement, is eager to point out.

In Britain, following the international success of several expensive costume-films of Alexander Korda's London Film Productions, an investment boom in film companies took place in the mid-1930s, reaching its height in 1936–37. Many investments were put into small production companies without a proven track record, without secured distribution access, and sometimes even of a dubious nature. Eventually most films did not live up to expectations, and many firms went bankrupt, resulting in a collapse of film investment in 1937.[81]

John Sutton has attempted to link the industrial economic work that aims to explain why some industries are highly concentrated and others not, to the issue of why some industries are located in certain countries (often rich, developed nations) and not in others.[82] His findings may also explain how it could be that after the quality race had started, most of the international industry became concentrated in the US and Hollywood and why other firms could not catch up.

Sutton defines a firm's capability as the cost per unit and the quality, which combined make a quality/cost ratio that can be improved by fixed and sunk outlays on items such as R&D and advertising. The number of firms is independent of market size: as the market grows, new firms do not enter, but existing firms increase their quality. If international labour immobility exists, the labourers of the pioneer industry's country capture most of the benefits of superior quality in the form of higher real wages. 'Follower-firms' that want to catch up often face a minimum quality threshold: although they may have low costs, their quality/cost ratio can be such that they cannot sell their products at any price.[83] Such a reasoning implies that it was inherently difficult for European and other film companies to catch up once they had been left behind: first of all, there was a big difference in capabilities, second, until higher capabilities were achieved firms could not compete on costs, and third, the high wages in the pioneer industry could drain away emerging talent in the follower industry. Fourth, any growth in market size would mean that the incumbent firms would increase their quality levels and followers would get even further behind.

This reasoning links the quality race discussed in the previous chapter to Europe's subsequent failure to catch up. It is also not unrelated to theories of economic geography and agglomeration effects, and we now turn to these theories to examine to what extent they can explain the failure to catch up.

[81] Dickinson and Street (1985). [82] Sutton (2001, 2005).
[83] This concurs with evidence of the international film trade discussed in Bakker (2004b) and in Chapter 9.

Network externalities and path dependence

At the industry level, theory on sunk costs could explain how concentration increased and why the surviving companies were all inside the US market, but not why they were all in Hollywood. Hollywood not only left the European film industry shattered, but also the old East Coast US film industry and an emerging film industry in Florida, which did not have the disadvantages European film companies had.[84] As self-evident as it may seem in retrospect, it was not at all obvious that Hollywood would become the centre of the film industry. As late as 1924, the *Wall Street Journal* predicted that 'the motion picture business of the next decade will be mostly within sight of the tower of the Woolworth building, except for tropical sets which can be made somewhere near Miami, Fla., 42 hours from Broadway. ... It is safe to say that in the future, the bulk of production will be done within easy reach of Manhattan.'[85]

Once film companies started to agglomerate in Southern California, they profited from substantial external economies of scale, thus preventing a European catch-up.[86] Both the theory and the timing suggests that sunk-costs theory can explain the industrial concentration and the decline of the European film industry in a first stage, while scale-based agglomeration economies can partially explain geographical concentration and the European failure to catch up in a second stage. Besides external economies of scale, however, substantial internal economies of scale existed, as noted above. If agglomeration benefits were the only and sufficient explanation, one would not necessarily expect such a high industrial concentration and internal economies.[87]

The agglomeration economies allowed sharing of inputs, facilitated knowledge spillovers, higher returns, and a thick market for specialised supply and demand. The Hollywood studios therefore benefited from being close to each other in the following ways: their creative and technical inputs would have less downtime; they could achieve a more optimal combination (or 'cast') of creative and technical inputs; they could more easily attract emerging top inputs from elsewhere; and

[84] Nelson (1980).

[85] 'Movies come east from California', *Wall Street Journal*, 7 April 1924, 9. During the 1920s, most majors had both Hollywood and New York/Jersey studios.

[86] For an economic analysis of scale-based agglomeration effects see Fujita, Krugman and Venables (1999).

[87] On internal vs. external economies of scale in international trade see, for example, Krugman and Obstfeld (2003: 120–55).

finally, they had a large specialised supply and demand. These four factors will be explored below.

First, because the Hollywood studios were located close together, they could reach a higher return on their investments in creative inputs.[88] The studios could lower costs because creative inputs had less down-time, since less travel was necessary, and because they could be easily rented out to competitors when not immediately needed. Because more of their time was used in actual production, Hollywood studios could pay their inputs more. Deals to rent inputs to other Hollywood film companies could be made quickly in times of slack, even for a few days, if necessary. In the late 1920s and 1930s, the Hollywood studios did indeed rent and borrow each others' stars and other creative inputs on a frequent basis, so frequent that the practice became a part of the anti-trust investigations that eventually led to the Paramount Decree of the US Supreme Court, in 1948.

Second, besides higher utilisation and thus lower average costs, the Hollywood studios could use their inputs in combinations that were more effective to increase film quality. Having all creative inputs together meant fast and low-cost try-outs to arrive at the optimal cast, and the ability to make quick adjustments during shooting. Each new creative input could be put in a more optimal combination with other creative inputs than could be done in the European film industry, and the resulting films would be able to earn more revenues. This further reinforced the first-mover advantage and the gap in sunk costs between Europe and America.

It is difficult to get insight into the quantitative aspects of creative inputs. For the year 1929, it is known that 277 actors and actresses were under long-term contracts in Hollywood, which could last up to a maximum of seven years.[89] This was probably the stock of major and minor star players available in Hollywood. They were outnumbered by a large majority of other actors and actresses who worked on a per-film basis.

Third, since the Hollywood studios were the first to escalate, they could outbid competitors to buy creative inputs from factor markets around the world (i.e. mainly Europe and North America), which resulted in films with an even higher perceived quality, thus perpetuating

[88] These investments were protected by long-term, seven-year contracts.

[89] 'Actors Equity Association', in Lewis (1930: 200–7). The year 1929 may not be representative, as studios were switching to talkies and silent stars' acoustic appeal was uncertain. Of the 277, 110 came from the stage, which possibly suggests that Hollywood was shedding silent stars in favour of stage talent. Corresponding figures for the silent era, however, are unknown.

the situation. Artistic and technical talent, such as actors, directors, cameramen, make-up artists, set designers, costume designers, lighting specialists and cutters, who initially developed in European markets, would at a certain point outgrow their markets and want to maximise the rent they could capture from their popularity or their talent, which often meant going to Hollywood.[90] Europe thus was a kind of laboratory out of which Hollywood could pick the most promising inputs. Non-monetary reasons were also important: even more than money, creative inputs wanted to maximise fame and professional recognition. For an actress, an offer to work with the world's best directors, costume designers, lighting specialists and make-up artists was difficult to decline.

When the German and the Swedish film industries experienced relative recoveries in the early 1920s, the most promising talent was bought away by Hollywood studios. Perhaps not coincidentally, both recoveries did not prove permanent. From the Scandinavian countries, for example, no less than sixty star actors and actresses emigrated to the US between 1910 and 1940.[91]

The importance of bidding on creative inputs is further supported by the fact that in the early 1920s, in the cases where European film companies tried to do the reverse and buy American creative inputs, they could only afford to buy away the stars that were already past their peak of popularity in the US.[92]

Documents of European film companies also give support to the importance of outbidding. Angus McPhail, for example, head of the scenario department of Gainsborough Pictures, while assessing potential film genres for Gainsborough writes: '... 2h. Drama. Apart from the fact that America can (and does) almost always outbid us in this class, drama requires more than any other type extreme technical polish; and to assemble a unit of really first-class technicians is beyond our means.'[93]

A political factor which facilitated the flow of creative inputs towards Hollywood was the declining political and intellectual climate in Europe from the late 1920s onwards. For example, many of the most skilled and creative persons in the German film industry left the country for Hollywood during the rise of the Nazis. Jean-Christopher Horak tried to

[90] Although this chapter assumes that creative talent was scarce, one could also argue that it was unlimited. It does not matter. Even in the latter case, after studios had bought the top creative inputs, it would take time for others to enter and reach the same position. Once this happened, Hollywood studios could simply buy again.

[91] Counted from Wollstein (1994).

[92] Hammond and Ford (1983: 383–4). British companies often hired American cameramen, as they were considered better (Slide 1986).

[93] Angus MacPhail, Memorandum on types of production, 7 May 1930, Aileen and Michael Balcon Collection, British Film Institute, London, file A59.

identify all the workers from the German film industry that fled the country after 1933 and made films in the United States.[94] The immigrants encompassed many different professions; from actors and directors to writers, composers, set designers, cameramen and make-up specialists. In all, Horak was able to identify about 470 of these highly skilled professionals, not counting the many professionals that emigrated before 1933.[95] It is likely that this number only concerned the top individuals in their particular fields, and that lower-level craftsmen had gone unnoticed.

The case studies of film budgets in the next chapter strongly support the notion that a huge gap in costs existed between Europe and Hollywood. Not only did absolute film production costs differ by an order of magnitude, but also the share of creative inputs in the budgets of US films was substantially higher than in Europe, at about 30–40 per cent for American films and about 20–30 per cent for European films.

Fourth, companies experienced external economies of scale in film production. Companies could easily rent out excess studio capacity (for example, B-films were made during night-time), and a producer was quite likely to find the highly specific products or services needed somewhere in Hollywood.[96] While a completed, full-scale European industrial film district might have been competitive, and even have had a lower over all cost/quality ratio than Hollywood, initially a first European major would have a substantially higher cost/quality ratio (lacking external economies), and would therefore not easily be able to enter.[97] If entry did happen, the Hollywood studios could and would buy successful creative inputs away, since they could realise higher returns on them, which resulted in American films having an even higher perceived quality, thus perpetuating the situation.

The adoption of sound film technology

Since the European film industry had already experienced all of its decline by the early 1920s, the introduction of sound film technology in the late 1920s cannot have been a cause for its demise. Nevertheless, it may have affected the ability of European companies to catch up. Below, the consequences of the shift to sound film will be described briefly. It will be argued that these effects were ambiguous, and that it cannot

[94] Horak (1986). [95] Counted from *Ibid.*: 48–154.
[96] Christopherson and Storper (1987, 1989) identify this as a major reason why production remained located in Hollywood after the majors left it to focus exclusively on distribution and production financing in the 1950s.
[97] See, for example, Krugman and Obstfeld (2003: 150–5).

clearly be established whether they would have made a catch-up less or more difficult.[98]

Directly after their introduction by Warner Brothers in the late 1920s, the cost of making sound films was more of an endogenous sunk cost, as studios could choose between making silent films or making talkies. Companies could not be sure that sound films would become the standard: they might have been just a fad, losing their popularity after a few years; they might have stayed a niche product provided alongside silent pictures in the bigger and more luxurious city-centre theatres; or they might have been mixed more generally with silent films.[99] Given this uncertain market environment, the choice of the number of talkies a firm made incurred something of an endogenous sunk cost, although once the choice was made it was roughly the same cost per film for every studio. A clear maximum existed, in which all films made by a particular studio would be talking pictures.

By 1930 in the US, however, and in Britain and France only shortly afterwards, it was clear that sound was going to dominate, and silent films became unsellable in the major markets, although they could still be exported to some colonies and other non-Western markets until about the mid-1930s. The added costs of making talkies now became strictly exogenous.

In many European countries sound technology increased the demand for domestic films and decreased that for foreign films, even if they were dubbed or subtitled. For European firms this meant that while their home market grew, their export markets declined. Detailed financial data of a French production company, for example, show how the share of the French market in total revenues jumped from between 20 and 30 per cent to about 70 per cent, making it almost sufficient to break even.[100] For the US majors, which already held almost all of their home market, export revenues decreased.

After companies experimented with dubbing, subtitling and making films in different languages, for each market either dubbing or subtitling

[98] This section focuses only on how talkies affected Europe's ability to catch up. On the talkies in general many books have been written. A detailed study of the US transition to sound, based on comprehensive research on archival sources is Gomery (1975). A similar study on Europe is Dibbets (1993). Although Dibbets focuses on the Netherlands, it gives a detailed overview of other European countries, because Dutch firms played a key role in licensing European sound patents.

[99] The talkies primarily constituted a quality improvement over silent films. For their labour-saving effect, alternative technologies existed. Ehrlich (1986: 200), for example, describes how the one-person cinema organ, which could replace an entire orchestra, was an important labour-saving innovation in Britain before the talkies.

[100] Bakker (2004b).

became the standard. Once this had happened, the effect above became less, as it could be circumvented. Nevertheless, it was not totally neutralised, as dialogue conveyed far more of a national culture, and dubbing and subtitling could decrease perceived quality.[101] The latter two increased the cost of exporting a film. Films of higher quality, which could expect a large number of viewers, could justify these costs, but many smaller films, which would have found an audience in the silent era, probably could not. Sound film made it more difficult to export comedies and dramas that depended for a large part on dialogue, while action films could more easily be exported.[102]

In Britain, where sound film became widely adopted from 1930 onwards, the share in releases of American films declined from 80% in 1927 to 70% in 1930, while British films increased from 5% to 20%, exactly in line with the requirements of the quota act (figure 7.7). After 1930, the American share remained roughly stable. This suggests that sound film did not have a large influence, and that the share of US films was mainly brought down by the Cinematograph Films Act of 1927, which set quotas for British films. Nevertheless, revenue data, which are unfortunately lacking, would be needed to give a definitive answer, as little is known about effects on the revenue per film.

In France, where sound film technology also became widely adopted from 1930 onwards, the US share of films dropped dramatically between 1926 and 1929, from 80% to 50%, as a result of protectionist legislation. During the 1930s, the share temporarily declined to about 40%, and then hovered between 50% and 60%. The brief drop was probably due to the transition to sound technology, when a common technique had not yet become established. From the mid-1930s, dubbing became the standard. During the first years of sound, the French share in total releases also increased further, from 20% in 1930 to 30% in 1932. Protectionist legislation apparently had a clear effect on the number of US and French releases, while the coming of sound further increased the share of French films, but did not considerably diminish the US market share. Again, revenue figures would be needed to decide the case.

[101] In Hollywood, initially films were shot in many different languages, often replacing actors who did not speak a particular foreign language. Studios also set up foreign production subsidiaries, most notably the huge Paramount studio in Joinville near Paris, and a string of smaller investments, including those of Fox and Warner Brothers in France. British, French, Spanish and German companies often made co-productions, shooting one version in each participant's language. After a few years, however, films were again shot only once. For the larger markets, the dialogue was dubbed, for the smaller ones, the film was subtitled.

[102] See the example of some Warner Brothers films above.

A study of Les Films Albatros suggests that the average domestic revenue of French films increased substantially with the talkies, often enabling film companies to break even on the French market alone, while export revenues decreased sharply.[103] It is unclear how much of the rise in revenue was caused by to the growth of the total market and how much to consumers going more often to French films instead of American ones.

Sound film thus does not appear to have basically changed the existing market structure. Although it did ensure European film industries small local market niches, it also diminished their export possibilities and their incentives to make films that appealed to a wider audience than that of a particular nation. The talkies did not block a possible catch-up, nor did they reverse the decline of the European film industry.

National origin as a quality marker

Since all companies that successfully escalated their sunk costs on film production were inside the US market, nearly all of the first successful feature films were American. This made a catch-up of the European film industry more difficult because national origin became part of the product quality and because companies introducing a new branded product often enjoyed a first-mover advantage.

National origin became part of a films quality in two ways. First, a certain nation functioned as the backdrop of a film, visible in landscapes, interiors, the physical features of the actors, costumes, the way in which actors acted, and for sound, the film's language and accent. A film would thus breathe the atmosphere of a country. Second, artistic and crafts traditions varied between nations. Films would have a certain national style, such as the Italian spectacle dramas of the early 1910s or the German expressionist films of the early 1920s. Responses to questions in audience surveys carried out in Britain and the US from the late 1920s, show that consumers did distinguish between films from different countries. British consumers regarded American films as a specific category distinct from films from other countries.[104] Nationality as part of the product image even pre-dated the advent of the movies. In 1900, many British people had been shocked by American plays that became popular. Members of Parliament even introduced a resolution denouncing the decline of morals caused by the American plays performed in London.[105]

[103] Bakker (2004b). [104] These surveys are discussed in the next chapter.

[105] Zeldin (1989: 36). Teachers were complaining about Americanisms slipping into English, and, two years later, a campaign was started against the 'invasion' of American cigarettes (Emmott 1989: 5–8).

Especially in industries with high advertising-to-sales ratios, such as the film industry, the company that first introduces a new product often holds a first-mover advantage for a long time, sometimes until another innovation is introduced. Sharp jumps in sunk costs often increase the market share of a particular brand, and this will often be quasi-irreversible in the long term.[106] This implies that the US escalators not only increased their market share, but also collectively established the US nationality as a brand-characteristic for feature films, because the first were American.

While the first mover incurred high absolute advertising costs, because of a high sales volume the advertising-to-sales ratio did not necessarily have to be the highest. Once consumers were used to a particular brand of film, the demand curve for a trial of another brand would be substantially lower than the vested brand, as the consumers had to invest energy in the trial and faced uncertainty of satisfaction. Only after the trial, if the new brand was at least as good as the old one, would the demand curve attain a somewhat similar shape.[107]

Combining the first-mover advantage in branding with the circumstance that nationality is part of the product image, it could be argued that, because the first feature films were American, consumers associated the feature film with American films. Seeing films from a different origin would incur a search cost and a risk of dissatisfaction. Europeans had acquired the regular habit of seeing American films, and this was difficult to change. Thus it became more difficult for European producers to catch up and to gain market share with their European feature films.

Admittedly, this reasoning is challenging and difficult to prove; the first-mover advantages in branding for the American industry as a whole probably only constituted a partial advantage and a limited barrier to a European catch-up. Nevertheless, several informed industry observers stressed the importance of national origin establishing itself as a product characteristic. It probably did make it more difficult for European film producers to catch up. Low-budget westerns, for example, epitomisations of the American national culture, were often more popular in markets outside America than in the US itself. In 1936, for example, United Artists bought a series of six Rex Bell movies specifically for export.[108]

[106] See the chapter 'How history matters' in Sutton (1998: 205–26).
[107] Scherer and Ross (1990: 580–92) summarises the industrial organisation literature on first-mover advantages.
[108] Vasey (1997: 161).

Market research in Britain and the US from the 1920s to the 1950s showed that consumers considered nationality an integral part of a film's quality.[109] The researchers of Political and Economic Planning, for example, noted:

> American films do not have to rely for their playing dates abroad solely on the relatively low level of their rentals. Their cheapness is certainly an attraction to foreign exhibitors, but far more important is the fact that they are firmly established in the favour of foreign audiences. ... A generation of cinemagoers has grown up largely nurtured on American films. It idolises Hollywood stars, it apes Hollywood manners and customs, and it has come to regard the lavish productions and plots associated with Hollywood as the model which all other films should emulate.[110]

A memorandum by Angus McPhail of Gainsborough Pictures, a British production company, also underlined the importance of national film style. He discussed the competitive position of British films vis-à-vis US films and summed up some advantages of the characteristics of US films:

> 2a. Western – outside our scope. 2b: Crook and underworld drama. We are at great disadvantage. 1. We have no gang-warfare to speak of. 2. We have no machine-gun battles in the street etc. etc. 3. Our policemen look ridiculous. 4. The Censors will not allow us to show realistically the relation between police and crooks, as shown in American pictures. 5. Lawlessness has no important status in England; we are too civilised. 6. We may not show third degree methods. In a word, crime in England is not romantic. 2c. Murder and court-room stories. We are at grave disadvantage because administration of English justice is far less dramatic than the administration of American justice; we have no bullying witnesses etc. etc. Also, wigs and gowns make for unreality. Also, there is too little corruption. 2d. Spectacular drama. Generally speaking we cannot compete with America in this class on the score of expense. 2e. College stories. University life in England has none of the glamour of American university life. If it were presented in the same petting party 'jazz age' romantic way, it would appear ludicrously unreal. 2f. Backstage musical stories. America does these brilliantly and spends so much money on them that she practically defies competition. 2g. Musical shows and operettas. Again, the financial question makes it difficult for us to compete in this class.[111]

While McPhail emphasised disadvantages in British national character and culture, the very genres he described had become popular at least partially because the American companies had been the first to escalate.

[109] Bakker (2003a). [110] Political and Economic Planning (1952: 243).
[111] Angus McPhail, 'Memorandum on types of production', 7 May 1930, Aileen and Michael Balcon Collection, file A59.

In the end he concluded that comedy was the one genre in which Gainsborough could compete:

> 2i. Comedy. This is the one class in which it is possible for us to equal or excel America. 1. Humour is the dominant English characteristic, the one high quality in which we (admittedly) exceed. Shakespeare to Dickens, Lewis Caroll to P.G. Wodehouse, English humour has always been supreme. 2. Doesn't require heavy financial outlay. ... 4. America has no native comic characters. She is forced to fall back on Cockneys, Irishmen, Scots, Jews. She has no comic dialect of her own – mainly wise-cracks. When Buster Keaton speaks he is not longer funny; when our Gordon Harker speaks he is fifty times funnier. America has filched everything else from us. Must we sit by while she swallows our one remaining asset? 5. For all other type of pictures we look at the right artists: our men are not handsome enough, our women are too cold; the best of them have gone to America. But we have still a wide support of comedians: America may possess Winnie Lightner, we possess Gracie Fields; we have not got Harold Lloyd but we have got Ernie Zotinga: Maisie Gay is fifty times better than Marie Dressler; Sydney Howard, Nelson Keys, Noow and Knox, Gordon Harker, Walter Forde, Tom Walls, Ralph Lynn, Stanley Lupiow, the Houston sisters, Harry Lauder, George Robey etc etc there are still plenty of them left. 3. For all of these reasons, the present writer urges the co. turns its attention to the production of comedy.[112]

The fact that McPhail chose comedy is interesting. Internationally, in the sound era it was difficult to compete with comedy films which contained a lot of dialogue, but for the national market, comedies were sufficiently differentiated from foreign movies to make successful competition possible. This held even for American companies. For example, in 1937, a Warner Brothers executive calculated that for four action pictures, average total revenue per picture was $690,000, with 57 per cent of revenue coming from foreign markets, while for seven 'dialogue pictures' average revenue was $159,000, with only 17 per cent coming from foreign markets.[113]

In the early 1930s, when he had to advise on a possible swap of foreign language versions with a French company, McPhail commented upon the national characteristics of French films:

> There is likely to be very great difficulty in finding French properties which will lend themselves easily to the preparation of an English version. ... Comedies and farces. Even the mildest of them are always too sophisticated both sexually and intellectually, for the English market. They need to be adapted out of recognition, and by a writer of brilliance. ... French companies will make films that resemble outcast novelists and playwrights 'freed from the direct

[112] *Ibid.*

[113] Sam Morris, letter to Jack Warner, 12 November 1937, quoted in Vasey (1997: 162). This is anecdotal information and it seems that A-pictures were compared with B-pictures.

competition and example of American formulae' – A good thing for France, a bad thing for those who wish to make English versions of French films.

At the end of his report McPhail concluded: 'For any arrangement we make – two French versions of English stories for one English version of a French story.'[114]

Government intervention

At the industry and national levels, government intervention was a factor that affected Europe's ability to catch up. The tariffs on film imports and the crippling entertainment taxes disproportionately levied on cinemas and favouring live entertainment during the 1910s have been mentioned in the previous chapter. During the collapse of the European film industry in the early 1920s, the European film production companies that managed to survive did so without government protection or support. However, the decline of the European film industry had taken place so fast and was so dramatic, that most European governments introduced protectionist measures during the mid-1920s. As noted in the first part of this chapter, the effect of these measures was, in general, the increase of the market share of domestic films at the expense of films from other European countries. The American films as share of total releases somewhat declined, but the drop was relatively mild compared to the fall of the share of other European countries. In terms of revenue, the US market share may not have decreased at all, although data lack to prove this.

Britain experienced a virtual collapse of its film industry in the early 1920s. By late 1924, not a single film was being shot in the kingdom, and a debate on protection started. In 1927, a protectionist quota policy was introduced, setting a minimum quota of domestic films that distributors and exhibitors had to offer. The result was a boom in studio construction and film production during the late 1920s. The Hollywood studios with British distribution subsidiaries invested in British films to meet their quotas. During the 1930s, the British industry grew substantially. A few British films, especially the ones of Alexander Korda's London Film Productions, became huge international hits.[115] Nevertheless, the industry remained in a precarious position, and at the end of

[114] Angus McPhail, 'Memorandum on English versions of French properties', 21 July 1930, Aileen and Michael Balcon Collection, British Film Institute, London. McPhail means that for every two Gainsborough films duplicated in French, Gainsborough films one English version of a French picture.

[115] Miskell (2006b).

the decade, after an investment boom in the mid-1930s, many companies went bankrupt.[116]

In France, protectionism also secured a captive market for French film production. Although the two main French companies went bankrupt, many small production companies existed that turned out a considerable number of films.[117]

Conclusion

During the interwar period, in both the US and European markets, sunk costs continued to increase substantially in real terms, although the level in the US was several times that in Europe. At the same time, the market continued to grow on both sides of the Atlantic, further boosted by the coming of sound technology. Only during the early 1930s did market size remain stable or even decline.

While in the US, during the late 1920s, concentration continued to increase, development in Europe, as far as it can be established, was mixed, with the degree of concentration fluctuating. Nevertheless, the production companies holding the largest market shares in Britain and France were in most years the emerging Hollywood producers–distributors.

Detailed historical research (Bakker 2007d) has identified fourteen serious European attempts since 1920 to set up an international producing–distributing organisation to equal a Hollywood studio. None of these attempts has been successful in terms of survival.[118] Nearly all the reasons for this were in some way connected to European companies having missed out in the escalation phase. Yet, besides all these individual reasons, one large underlying circumstance tilted the playing field to the disadvantage of European companies: no matter who triggered the jump in sunk costs, be it American or European companies, increasing sunk costs made market size matter more, and this put the European producers at a disadvantage.

Before the war, the European film market was relatively integrated. Films were traded and distributed internationally, and hardly any tariffs on films or other protectionist measures existed. The odds turned against European producers during the 1910s: market size began to matter

[116] Dickinson and Street (1985). [117] Abel (1984: 36–8).

[118] The two non-European attempts, the takeovers of Twentieth Century Fox by NewsCorp of Australia and Columbia/Tristar by Sony of Japan, were successful in terms of survival, but hardly in financial terms, given the large write-offs the acquirers had to make.

more, while the European market actually started to disintegrate. After the war, tariffs on films had been put into place, popular sentiments against films of other European nationalities surfaced, protectionist legislation was introduced in many European countries, and collusion among the Hollywood studios blocked access to US distribution. Thus European producers found themselves increasingly at a disadvantage.

One could argue that European producers should not have suffered, given that films were amortised on the world market. Nevertheless, besides the collusion of the Hollywood studios, which hampered access to US distribution, European companies faced a time lag – and thus larger capital costs – when releasing their films on the US market: they lacked distribution access, and they found it difficult to obtain finance in Europe for films that had to break even on the US market and for which US distributors would need to give guarantees. The only tried method to enter the US market had been to enter US production and distribution – as Pathé, Gaumont and Éclair had done in the 1900s and 1910s and as J. Arthur Rank did in the 1930s, by buying a quarter stake in Universal.

When, in 1919, the European companies were in a position to respond to the escalation strategy of the emerging Hollywood studios, their options were limited. First of all, the gap in sunk costs was too great for European companies to bridge; the Americans simply had a lead that was too large. Second, American firms could outbid their European counterparts on creative inputs because they were first, an advantage increasing over time because of scale effects and network externalities. Third, the US majors were quick to set up their own foreign distribution networks, thus ensuring strategic access to screen-time, and capturing the rents of their own copyrights. Fourth, because the emerging Hollywood studios were first to escalate their spending they could offer a high output of films branded with stars and stories, which they offered in blocks to exhibitors.

Fifth, since national origin was part of the product image of films, American films collectively may have reached a certain brand-awareness among consumers in many parts of the world that made it difficult for films from other countries to compete, as consumers had to incur search and switching costs, to establish whether the films of other national origins offered similar quality. It was difficult to encroach upon entrenched market shares, as history shows for most advertising-intensive and some R&D-intensive industries. Because nationality functioned as a kind of brand name, and American films held the largest market share, the film audience had developed an appetite for American films, and films of other nationalities were considered as being of a different, often inferior, flavour. Sixth, since the late 1920s, the Hollywood studios colluded in the

American market, blocking access to screen-time to US independent producers and to European producers.

The interventions of European governments in the mid-1920s further disintegrated the European market. While temporarily to the advantage of the domestic industries, the effect was that in European countries, American companies maintained most of their market share, while that of other foreign industries often disappeared outside their home markets.

Since protectionist legislation only preceded the coming of sound in Europe by a few years, it is difficult to completely disentangle their impacts. Available information suggests sound film had a similar effect on the domestic film industries: European films became more difficult to export, but held higher market shares at home.[119]

Europe thus faced the dilemma of crafting films for the taste of its home market, thus still managing to gain a substantial revenue in the home market though little in the foreign markets, or of crafting films for the taste of an international audience and obtaining a small revenue in the home market, but more risky and larger revenues in international markets.

Had the American studios not set up foreign distribution networks, had they not colluded, had the gap in sunk costs been smaller, had the Hollywood industrial district not emerged, had the talkies been adopted later and had their governments not intervened separately, European film companies might have had a chance to catch up. History mattered, and the history of the European film industry throughout the rest of the twentieth century was defined by trying to make up for what they failed to do in the years that counted.

[119] See Chapter 9.

8 How films became branded products

> Men are like stars. Some generate their own light, while others reflect the brilliance they receive. José Martì

The previous chapters showed how, in less than half a century, moving pictures grew from an emerging, fragmented business into a concentrated, large-scale industry.[1] In 1900, film viewing was an inexpensive, brief, and haphazard activity; viewers saw many short films in borrowed venues like fairground tents, music halls, and theatres. By the 1930s, cinema-going had become a regular pastime, with audiences viewing one or two feature films per programme in purpose-built cinemas. In 1900, showmen and producers sold each other a supply of copies varying in quality and quantity through local or regional networks. By 1939, specialised distribution organisations rented films to cinemas and carefully co-ordinated logistical and promotional operations through international networks. In 1900, film production was low-cost and eclectic, involving many movies of different types and lengths. Forty years later, production concentrated on relatively few long, high-cost feature films, which were carefully budgeted and heavily promoted.

The preceding two chapters focused on the essential feature of this transformation: the multiplication of production costs. The figures below, in constant currency, may serve as a reminder of the scale of the increase: in the United States in 1909, the cost of making a movie ranged between $550 and $1,100;[2] by 1914, the average cost of a Fox feature was already $23,000, and it rose to $186,000 in 1927, shortly before sound became widespread. In 1929, Fox's sound films cost $308,000 on average. Similarly, Warner Brothers' average production costs increased from $90,000 in 1922 to $168,000 in 1927, and to $539,000 in 1940. RKO's costs nearly doubled from $220,000 per talking picture in 1929 to $424,000 in 1939. Metro-Goldwyn-Mayer

[1] Parts of the current chapter were published in Bakker (2001a).
[2] Allen (1980: 219); Hampton (1931: 211). All US figures are in constant 1927 dollars.

(MGM), which specialised in high-budget films, saw its production costs escalate from $310,000 per picture in 1924 to $967,000 in 1939.[3]

In Britain between 1905 and 1907, an average film cost not more than £100 to make, the most expensive production, £600–£700. During the 1920s, average production costs grew to about £10,000–£12,000; after the introduction of sound at the end of the decade they rose to around £17,000, and in the late 1930s to about £35,000.[4] In France in 1905, the relatively expensive 'trick films' made by Méliès for bourgeois audiences cost around 34,000–57,000 francs, while the negatives Pathé turned out cheaply and in large quantities cost only 16,000–17,000 francs.[5] In the interwar period, average production costs increased from 410,000 francs in 1923 to over 1.9 million francs on the eve of the Second World War.[6]

The preceding chapters have demonstrated that these huge increases were not the result of exogenous forces such as new, costly technologies or sharp increases in the cost of raw materials. Except for the adoption of sound in 1927, basic cinema technology – and hence the minimum necessary costs of shooting a film – remained remarkably stable. The main causes of the cost explosion were endogenous: film producers started paying large sums for creative inputs (actors, directors, and literary works) and for expensive stages, sets, scenery and special effects.[7] In the previous chapter it has been argued that, by increasing its endogenous sunk costs, a film company could increase its market share.

While the increased costs incurred for expensive scenery, on-location shooting and special effects are more or less evident, the question remains why such a large part of the escalation of spending on endogenous sunk costs was on such intangible costs as the pay for stars and stories; why film companies were prepared to pay so much for these creative inputs. In the previous chapters, it was argued that the adoption of film technology stood at the basis of the escalation of sunk costs in the entertainment industry. The technology forced the integration of previously isolated entertainment markets, automated the performance and standardised it, while a growing demand for entertainment further increased the size of the internationally integrating market. How could these forces result in higher costs for creative inputs?

[3] Koszarski (1990: 85); Glancy (1992, 1995); Jewell (1994). Between c. 1907 and 1917 costs increased in part because of the tenfold increase in average film length.
[4] All British figures in 1927 pounds (Low 1949: 118, 1971: 276; Dickinson and Street 1985: 131).
[5] All French figures in 1927 francs. Abel (1994: 23). Figures are derived from cost per metre multiplied by 175 metres as average film length.
[6] Crisp (1993: 16). [7] See Chapter 6.

It could be argued that, by folding the stars of each local market into an international hierarchy, these forces gave high-quality entertainers more capacity to compete, allowing them to command higher rewards proportionate to their quality than before.[8] Pay for creative inputs might also have risen because film producers started to use them as brands to persuade consumers to see their movies, in order to reduce the *ex ante* uncertainty about a film's popularity. Yet another explanation might be that, as film companies increased their output, creative talent simply became scarcer and so demanded higher payments.[9] But the rise in pay was not the same for everyone; a few creative inputs received large increases while others gained only modest increments, suggesting that scarcity cannot be the sole explanation.[10] Finally, it is possible that the eight Hollywood studios tried to prevent the entry of new companies by making the acquisition and maintenance costs of creative inputs very high, through paying the available creative inputs large salaries, spending heavily on their promotion, and keeping them under exclusive contract for long periods. This strategy was limited, because contracts could last at most seven years – though for brand names, 'eternally' protected by trademark law, such a strategy was more viable.[11] In addition, the costs of creative inputs started to surge long before the eight studios dominated the industry, so the collusion explanation can be discarded.[12]

What follows argues that the rise in pay for creative inputs occurred because film producers increasingly used them as brands and that films consequently came to resemble heavily branded products. Because film companies could not own them, artists and writers were able to capture in part the value of the brands they constituted, unlike, for example,

[8] For upscale entertainment such as symphony orchestras or operas, an international market already existed and, in the late nineteenth century, emerging music hall and vaudeville circuits with circulating artists had already integrated the entertainment market nationally on a limited scale (see Chapter 5). Market integration caused the price of creative inputs to rise because, unlike trademarks or patents, creative inputs are humans or controlled by humans (as in the case of literary works and music), and thus are able to capture at least in part the rents derived from their popularity.

[9] Even before the advent of the modern entertainment industries, the few top creative inputs could already demand high fees. Dan Rice, for example, the most popular American clown, was reportedly earning $1,000 a week in the late 1860s, which, if true, was probably about the highest any performer could earn. In constant dollars, this was slightly above what the eleventh and twelfth highest-paid film stars earned in 1916 (Chaplin May 1932: 123); table 8.7. and figure 8.2, below.

[10] See, for example, Koszarski (1990: 95–116, 259–314). A general increase in pay could have coincided with a more disproportionate income distribution.

[11] See, for example, Kaldor (1950).

[12] From the late 1920s onward, they did collude in distribution, which eventually led to the Paramount Decree of the US Supreme Court (1948) that forced them to divest their cinemas (Gomery 1986: 24).

animals.[13] Thus market integration, standardisation and automation enabled both the process of branding and the higher rewards of high-quality talent.[14]

This chapter, then, will examine how creative inputs came to be used as brands, which branding techniques film producers developed, and how consumers perceived those brands. It links to the rest of this book in four ways. First, it addresses the 'how' of the quality race discussed in the previous chapter: how exactly did firms attempt to increase the perceived quality of their product and on what items did they focus their extra expenditures on quality? Second, it examines the development of the film industry, not from the consumption level (as in Chapters 3 and 4), or from the production level (Chapter 2 and the preceding chapters in Part II), but from the interface between production and consumption, between technology and tastes, by focusing on the evolution of the product characteristics of film, and how they were shaped by the interaction between the formation of consumption habits and production strategies. Third, this part gives more detailed insight into entertainment consumption, and thus complements Chapters 3 and 4, which only discussed the aggregate consumer expenditure on entertainment, but did not examine consumer preferences for various quality dimensions of spectator entertainment. Finally, this chapter provides the background for the detailed investigation in Chapter 10 into how firms gained knowledge about consumers and changed their production strategies accordingly.

This chapter will first discuss the historical development of branding in the film industry. Subsequently, microeconomic studies of both the production and the consumption of films take a closer look at specific aspects of the branding process.

[13] An early example of a creative input which was nearly exclusively used for his popular appeal, and not for some kind of objective acting quality, is the now archetypical superstar elephant Jumbo. The only way in which he generated box-office revenue was by his name and image – amplified a thousand times by the greatest publicity genius of his era. In the 1880s, P. T. Barnum bought this elephant in England, for $30,000, called him Jumbo, and made him part of a carefully publicised tour. After three years of circusing through the US, Barnum and James A. Bailey, his business partner by then, reportedly earned a net revenue of $1 million from Jumbo. If that figure is correct, it would come down to a return on investment of 222 per cent. Jumbo, unfortunately, could hardly capture any of the rent of his popularity. At the end of the three years, he was killed by a locomotive in the railroad yards of St. Thomas, Canada (Chaplin May 1932: 96).

[14] Within economics a largely theoretical debate runs on the relationship between talent and pay, starting with Rosen (1981), which mainly hinges on how to define talent, and whether 'small' differences in talent at the extreme are really small. For a popular overview see Cook and Frank (1995).

The development of branding in the film industry

The movie actor, like the sacred king of primitive tribes, is a god in captivity.
Alexander Chase

During the period 1880–1930, market integration led to many business innovations such as single-price selling, branded products marketed nationally, department stores, mail-order firms, advertising agencies, market research, and distribution and delivery systems such as refrigeration.[15] The film industry shared several of these innovations, especially single prices, national branding, advertising and market research, but the most important was probably the development of a dedicated distribution delivery system, the movie theatre. Richard Tedlow observes a shift from regional to national branding and marketing, and the integration of manufacturing with retailing between 1880 and 1920. This coincided with a shift from 'low volume, high margins, moderate profits' to 'high volume, low margins, high profits'.[16] In the case of entertainment, the film industry forced this shift upon the industry at large, by integrating regional and national markets and initiating a 'high volume, low margins, high profits' production model.[17] The key characteristic driving these developments was uncertainty: film producers incurred nearly all costs in advance, and they could not know beforehand the number of tickets that would be sold. They could not recover costs if a film failed to win audiences because a film negative – unlike real estate, a factory, or machinery – had a physical value close to zero. Uncertainty was a limited problem in the early film industry, as sunk costs remained relatively low and losses easy to bear. However, as production costs increased during the 1910s, film producers faced greater risks and higher potential losses.[18]

In parallel, film consumers also faced uncertainty. Because a film is an 'experience' product, movie-goers could not know beforehand if it would be satisfactory. When ticket prices were low and showings consisted of a succession of short films, this was not problematic, as movie-goers were willing to accept the limited risk of an unhappy experience.

[15] Fullerton (1988); Pope (1986), quoted in Church (1999).
[16] Tedlow (1990), as discussed in Church (1999: 410–11).
[17] During the feature film's emergence, high volumes coincided with increasing prices because features substituted more expensive forms of entertainment.
[18] The process in which sunk costs increased was probably self-reinforcing. As costs increased, producers wanted to spend more on creative inputs guaranteeing audience attention on release, and these additional outlays in their turn increased sunk costs, which again increased the need for branded creative inputs, and so on, in theory, until the maximum possible level of sunk costs given market size was reached.

However, during the 1910s, rising ticket prices and longer films – eventually a single feature – drove up both consumers' monetary costs and their opportunity costs, and thus increased their risk.[19]

In response to this uncertainty and to the emergence of fixed cinemas between 1905 and 1907, which needed a regular, dependable supply of pictures, film companies first tried to rationalise production, moving from 'real-life' to fiction-based films. Producers could carefully budget and time their release, and they had the longest shelf-life. Initially, production costs were often lower than for non-fiction genres like news, sports, travel, documentary, or educational films.[20] In roughly ten years, the feature film developed into the dominant film format. Paradoxically, in light of their notoriously high budgets and unpredictability of success in the present day, feature films appear to have originated in an attempt to reduce both costs and risk.

Second, film producers responded to uncertainty by trying to brand films. They wished to motivate the consumer to see the film and to compensate for the fact that the potential movie-goer could not know the full quality before consuming a film.[21] Branding was particularly important to film companies because they continuously launched new products with short life-spans and therefore needed to persuade large numbers of consumers to buy the product 'now'. The process of branding became self-reinforcing, as greater outlays on branding increased the size of the risk and more assurances were needed that enough consumers would see the film. Moreover, one would expect branding to be relatively effective in the film industry, because rising monetary and opportunity costs would increase consumers' search activity, and they would thus become more receptive, not only to advertising but also to reviews and word-of-mouth.

[19] Bächlin (1945: 96–8) addresses information asymmetries and the risks of film production, but not asymmetries among consumers. He mentions three other production risks: unpredictability of creative talents' efforts; risk that a film is not completed; impossibility of changing content after release. Bächlin notes that risk increases with production costs. He addresses 'consumption risk', but by this he means simply the producer's risk that few people will watch a film. Sedgwick (2000: 23–38) gives a more formal economic analysis of film consumption than is presented in the text.

[20] Allen (1980: 212); Abel (1994: 23). Allen locates the shift toward fiction films in the United States in 1907–08, Abel around 1906 in France.

[21] For a general overview on trademarks and branding, see Wilkins (1992) and Casson (1994). Geographical origin (food) and product category (luxury products) may also constitute part of a brand image. Branded goods often have innovative packaging and design, a carefully designed distribution network, and a high promotion-to-sales ratio. Davis, Kay and Star (1991) found an average advertising-to-sales ratio of 0.4% for search goods versus 4.0% for experience goods, examining 300 products in 1989 Britain. In practice it is difficult to distinguish between the informative or wholly persuasive character of branding. Advertisements without any information on price, point-of-sale, or objective product characteristics, however, are exclusively persuasive.

Film companies trying to turn films into branded products confronted a product life-cycle too short to create brand-awareness for each individual film. They responded to this dilemma in three ways: first, they extended the brand beyond one product into a series of successive products, using the trademark, the serial, or the star; second, they acquired an existing brand about which consumers already had reached a high level of awareness, such as famous plays, novels, or music; and third, they increased the rate of return on their investment in branding to compensate for the short life of their products (films) by using the film itself as a brand to turn intrinsically unbranded (manufactured) products into premium branded products – for example, by the use of stars as spokespersons for products or by the licensing of what we today call 'merchandise tie-ins'.

The United States

At first, the technological novelty of film was sufficient to attract an audience, reinforced between 1900 and 1910 as additional novelties such as coloured film and film with sound came into vogue.[22] Around 1907 the first fixed cinemas, the Nickelodeons, emerged, with at most a few hundred seats. Companies used branding both to attract consumers regularly to the cinema and to convince cinema owners of a product's quality and audience appeal. The main instrument first used in this way was the production company's trademark, which figured prominently on films and in advertisements. In the early 1900s, the French company Pathé, the largest film supplier in the United States, owed its dominant market position in part to its ostentatious trademark, a red rooster, which it promoted directly to audiences by displaying it prominently on its films and intertitles. American companies used their trademarks mainly in advertisements aimed at distributors and exhibitors.[23]

With the formation in 1908 of the Motion Picture Patents Company (MPPC), a patent pool of previously litigating companies, trademark branding became widespread.[24] The trademark not only informed

[22] Edison's first slot machines appeared in 1894; in 1895 the Lumières added projection (Abel 1999: 40–7).

[23] Allen (1980); Abel (1999: 17–19). Abel argues that the combination of Pathé's trademark with its technologically superior stencil-coloured films also helped to lure consumers into the Nickelodeons.

[24] Abel (1999: 17–19); Bowser (1990: 137–9). There did not necessarily exist a link between the MPPC and trademark branding. Nevertheless, after the settlement of the patent law suits, film companies could focus on advertising and promoting their trademarks, without the risk of new lawsuits. MPPC companies appear to have used

consumers about a film's minimum quality, but it also persuaded them to see the film by increasing the perceived quality. Over time, however, trademarks lost their importance as a branding device for the movie studios. A study of American trademarks in 1942 shows that trademarks could no longer have been important in persuading consumers to see a particular film.[25] Respondents succeeded in matching the trademark to the correct film studio in only 30 per cent of cases. Only for MGM and Paramount, with scores over 50 per cent, may trademarks have played a limited role. Another survey found the same for Britain in the late 1920s: only 58 respondents out of 2,000 were able to mention a favourite film company, and only American studios received more than a few responses.[26]

In the early years of film making, trademarks could facilitate product differentiation by informing consumers about genres. Essanay, for example, was known for comedies and Selig for westerns.[27] The use of genre as a brand was difficult, however, because it was non-proprietary. Moreover, numerous surveys showed that consumers' genre preferences were distributed rather evenly, conferring little brand advantage on a studio specialising in one of them.[28]

In 1912, serials, films in twelve or twenty-four weekly instalments of one or two reels (fifteen to thirty minutes) each, became popular. They reduced consumers' risk by spreading search costs over all instalments and often piggybacked on consumers' existing brand-awareness of the popular dime novels on which the serials were based. As the Mutual Film Corporation advertised to exhibitors, 'A serial guarantees a secure audience'.[29] Serials expanded a film's shelf-life to three or four months, long enough to make heavy advertising viable and turn the film itself into a brand.[30] Advertising for serials was undertaken on a grand scale.

trademark promotion to avoid brand-awareness of consumers around stars, who, unlike trademarks, could capture the rent of their popularity (see below).

[25] Handel (1950: 76).

[26] These were Famous Players (Paramount), MGM, and First Nation with 13, 10, and 8 responses. For another question 'Name your favourite film producer', 158 respondents wrote the name of a studio instead of a producer: Fox, Famous Players, MGM and First National received 26, 25, 19 and 16 responses. The only well-known British companies were Gaumont-British (22) and Stoll (14). Tabulated responses to the 'Bernstein Questionnaire', questions 3 and 4, Sidney L. Bernstein Collection, British Film Institute, London (SLB), Box BQ 2 (1927).

[27] Abel (1999: 93). Trademarks were also used to prevent illegal copying; see *Ibid.*: 14–19.

[28] For example, 'National high school students' poll 1923' (Russell Sage Foundation 1923); 'Market research of Kinema Theatre, Fresno, California' (Kinema Theatre 1924); H. W. Hepner (1929, 896); all tabulated in Koszarski (1990: 29–31). See also Miller Mitchell (1929: 167–8), and Handel (1950: 121).

[29] Dall'Asta (1999b: 281–2).

[30] Dall'Asta (1999a: 289).

Pathé, for example, offered a $25,000 cash prize in a fan competition and had an exclusive contract with the Hearst newspapers to print the accompanying stories.[31] Pathé also pioneered the simultaneous release, premiering a film in five hundred cinemas, supported by advertising in local Hearst papers.[32] Shortly afterward, the Thanhouser company reportedly spent $250,000 on a national advertising campaign and contest for its *The Million Dollar Mystery*.[33]

In late 1915, film companies started to offer serials with episodes in sequel to replace those with independent instalments that had prevailed before. The tactic proved insufficient to make the serial into the dominant film format, however, and it was marginalised by the feature film, which was emerging between 1915 and 1917, though specialised companies continued to make low-cost serials for smaller cinemas until the advent of television.

From the early 1910s, stars were increasingly used to brand films. The emerging independent companies lured away many of the MPPC companies' creative and technical talent by offering huge salaries. Whereas the MPPC studios sometimes refrained from printing the players' names in advertisements – out of fear that they would demand higher fees – the independents publicised their stars prominently. In 1908, movie actors earned only $5 a day. In 1911, Mary Pickford earned $175 a week, then considered the highest fee attainable, but five years later she secured fifty times as much, and one hundred times as much in 1918.[34]

The connections that audiences drew between stars and individual films were much stronger than their loyalty to abstract trademarks, and stars also had a longer product life-cycle than the films or serials themselves. These advantages made the huge outlays on advertising stars profitable. As Rachael Low put it:

> [Film actors] found themselves after a while in the possession of a monopoly similar to that of a trademark, with all the goodwill attached to such an identification. The audience's familiarity with the players' faces gave a film in which they appeared a relative popularity not necessarily dependent on its quality.[35]

[31] This publicity also had an informative purpose, providing the story beforehand. See 'Boosting Pathé Pictures. Pathé Frères makes alliance with the Hearst Dailies inaugurated big advertising campaign', *Moving Picture World*, 19, March 14 1914, 1392–3; Singer (1996).

[32] Grau (1914: 242).

[33] This figure may be inflated as part of the promotion strategy (Staiger 1990: 13).

[34] Kerr (1990); Grau (1914). In constant dollars, Pickford earned about sixty-six times as much in 1918 compared to 1911.

[35] Low (1949: 124).

Long-term contracts made it attractive for studios to invest in promotion of their stars, allowing them to capture part of the rent from the stars' popularity.[36]

Stars became tradeable properties, almost licensable like patents. In the late 1920s and 1930s, the eight Hollywood studios often rented stars to each other at market prices, usually substantially above contract prices. Bette Davis, for example, was paid $143,000 a year by Warner Brothers in the late 1930s – about $30,000 a film; but when Warner rented Davis out to Goldwyn for *The Little Foxes* in 1941, the company received $385,000.[37] Trademarked fictional characters such as Felix the Cat or Mickey Mouse offered the advantage that they were exclusive and permanent company property.[38]

With the emergence of stars, film companies also started to use the popularity of existing properties such as short stories, novels, and plays to brand their films. This practice saved both promotion costs and time. It had taken years for literary works to build their fame, but their accumulated 'brand-awareness' could be instantly used by the film studios. In 1914, the average price for the film rights to a play was about $3,500, less for novels. Soon film companies started crowding each other out in their hunt for literary property rights.[39] In 1920, prices for successful plays had reached over $40,000. The most popular plays received even more: D. W. Griffith paid $152,000 for *Way Down East*, and in 1921 *Turn to the Right* (452 Broadway performances) sold for $218,000. In the 1920s, the screen rights of from 10 to 15 per cent of Broadway productions were sold. Several film companies invested in Broadway in order to obtain lower prices, using Broadway as a 'brand-breeder'. The advent of talkies pushed up demand for film rights, the average price for a play reaching $74,000 by the late 1930s.[40]

Stories had become more important as average film length increased, from about 500 feet (seven to eight minutes) in 1908, to 1,200 feet in 1914, and to 2,200 feet in 1917, when the five-reel (seventy-five-minute)

[36] Most contracts gave the studio rights over the star's image, voice, and likeness. For example, actor Sidney Greenstreet was contractually bound to keep his weight above 250 pounds, and it was rumoured that Buster Keaton's contract forbade him to laugh in public. See Gaines (1991: 161, 148–59).

[37] Shipman (1979), quoted in Albert (1999). [38] Gaines (1991).

[39] The *Film Daily Year Book* in the 1920s, for example, contained lists with best-selling books' sales figures.

[40] All prices in 1927 dollars. McLaughlin (1974: 51–2). Most rights were bought for a fixed fee, not a percentage. $10,000 might cover the play's production costs; *Ibid.* 57, 66–7. In 1925 Fox Film Corporation invested $150,000 in plays, in return for half the stage profits and an option on screen rights, for which it paid $500 per week played, or equalled a rival bid; *Ibid.*

feature had become the prevalent format, surrounded by a multitude of small films. Ticket prices increased synchronously, and from 1912 onward, large high-class cinemas of 1,000–2,000 seats emerged, often replacing the smaller, more 'popular' Nickelodeons.[41]

A high promotion-to-sales ratio is characteristic of heavily branded products, and, although exact figures are lacking, it is clear that publicity was fundamental to film companies' success.[42] The calculations of Walter W. Irwin, distribution manager of Vitagraph-Lubin-Selig-Essanay, illustrate how film developed into an increasingly branded product. As discussed in Chapter 6, in 1915 Irwin calculated that a cinema showing average features that changed each day had daily sales of $300 and a margin of $125 (42 per cent). Film rental was 8.3 per cent of sales, advertising 16.7 per cent. If the cinema then shifted toward a weekly, highly publicised quality film, and doubled expenditures on both film rental and advertising, sales would grow to $550, the margin to $300 (54 per cent), while film rental and advertising would be 9.1 and 18.2 per cent of sales, respectively.[43] These rough figures suggest that consumers were receptive to increases in both advertising and quality.

Producers and distributors advertised stars extensively on postcards as early as the 1910s.[44] They issued fan magazines, generated publicity in the press, and featured their stars in movie advertising. By 1913, the popular *New York Evening Journal* sold $3,000 in movie advertisements daily.[45] Film companies often had a special department to answer fan mail and sometimes recorded the number of letters per star.

Film companies also initiated other national advertising campaigns in addition to those launched for serials. In late 1913, Universal hired the Chicago advertising agency Witt K. Cochran for a $250,000 national campaign. Two years later, when Paramount increased the rental rate for its pictures, it embarked on a similar nationwide campaign. Within four months, other major producer/distributors such as Mutual, Triangle, World Pictures, and Metro Pictures had followed suit.[46]

In the 1920s, as cinemas changed programmes less frequently and films had a longer run, promotion increasingly focused on individual films.[47]

[41] Allen (1980); Kerr (1990); Gomery (1992). [42] Staiger (1990).
[43] However, few theatres were changing weekly at the time (Koszarski 1990: 34).
[44] Parsons (1927). Parsons, advertising manager of Pathé Exchange, discerned three periods: 1907–10: the formative period, when advertising was haphazard and unsystematic; 1910–13: the transitional period when film companies created publicity departments; 1913–23: when they massively escalated their advertising outlays.
[45] Grau (1914: 237).
[46] Staiger (1990: 13, 14). Staiger argues that as film producers and distributors increasingly asked a percentage instead of a flat fee, consumer advertising became more profitable.
[47] Koszarski (1990: 36–40).

In 1928 Pathé launched a $75,000 national campaign aimed at consumers for Cecil B. de Mille's version of the life of Christ, *The King of Kings*. Paradoxically, by promising national consumer advertising, Pathé Exchange increased exhibitors' willingness to pay and could thus obtain higher rental prices. To make the advertising effective, Pathé had to orchestrate a 'wide' release, in five hundred theatres at once. Thereafter, the practice of highly advertised wide releases gradually became established in the American industry.[48]

For eight pictures produced by FBO Productions in 1927–28, advertising expenditures ranged from $225,000, or 9.1 per cent of production costs, for the most expensive picture, to $4,500, or 1.4 per cent, for the cheapest.[49] By his own account, Samuel Goldwyn's advertising campaigns of the early 1920s reached at least 27 million people.[50] To launch Anna Sten as a star in 1934, Goldwyn and United Artists together spent $18,000 during the first week alone after her film's release. In late 1935, Paramount announced that it would spend $500,000 in three months to promote eight new films. Meanwhile, Metro-Goldwyn-Mayer was spending $3 million a year on advertising. It used 168 newspapers with a circulation of 23 million, 40 national magazines with 34 million in circulation, and poster campaigns reaching 200 million people a month. By 1947, the industry's annual spending on newspaper advertising had reached $52 million, making it the third largest advertiser in newspapers.[51]

As advertising costs grew, film companies discovered that they could increase the return on their investments in branding by licensing brands to manufacturers of otherwise unbranded products. This practice also made it easier to amortise the huge promotional expenditures for a movie, and 'merchandised products' in turn further promoted the film. Merchandising had the same advantage for manufacturers as stories did for film companies: instead of spending money for years to build their own brand, they could buy an instant brand.[52]

[48] Lewis (1930: 409–16).

[49] FBO Productions, Inc. was the production subsidiary of Film Booking Offices of America, a distribution organisation. (*Ibid.*: 392–5).

[50] Samuel Goldwyn (1921).

[51] 'Paramount Pictures to spend $500,000', *Printer's Ink*, 173, December 5, 1935, 83. The investment apparently paid off, as the film grossed $105,000 in that week; 'Goldwyn United Artists plunge heavily to pull over Anna Sten', *Sales Management*, 34, February 15, 1934, 136. Hughes (1935: 675, 702); Rosten (1947: 121).

[52] This licensing enabled manufacturers of unbranded products to obtain higher margins. While relatively, the licensing fee as percentage of sales may have been considerably higher than the advertising-to-sales ratio of the market leader, the licensee did not have to incur the immense *absolute* advertising outlays of the market leader, which are necessary to create a minimum level of brand-awareness and are fixed and sunk, independent of sales volume.

The first instances of merchandise tie-ins appeared in the 1910s, when department stores offered for sale costumes worn by stars in Pathé serials.[53] In the 1920s, a whole line of products centred around Felix the Cat, and in the early 1930s child star Shirley Temple received a first royalty check of $75,000 for sales of Shirley Temple dolls.[54] In 1913, *Ladies' World* doubled its news-stand circulation when it ran the weekly story of the Edison serial *What Happened to Mary*.[55] Star testimonials afforded another opportunity for brand extension. For example, between 1916 and 1921, Mary Pickford was the face of Pompeian Skin Cream.[56] In many cases, the actors had no say in the uses to which their 'brand power' was put: to her disgust, actress Kay Francis watched herself figure in shoe polish advertisements.[57] A study of Canadian magazine advertising shows that testimonials by stars increased from 1.5 per cent of all advertising during the 1920s to over 5 per cent in the 1930s, while testimonials by experts declined from 7.5 to 4.5 per cent.[58] Stars thus had become pure brands, enabling a triumph of persuasion over information. By simply attaching a star's name and image to an unbranded product, makers could multiply its value.[59]

Britain

The early British film companies made extensive use of trademarks, sometimes combined with advertising about technological wonders. The Urban Trading Company used its specialisation in coloured film to attract customers, using a patented colour process branded as 'Kinemacolor'.[60]

French, American and Italian companies supplied the majority of films shown in Great Britain, and it is not surprising that the first stars in

[53] Staiger (1990: 11).

[54] Kanfer (1997); Gaines (1991: 164). Temple's exceptional popularity enabled her mother to negotiate a special contract. Most actors got few of the studios' merchandising receipts.

[55] Grau (1914: 238).

[56] Grieveson (1999: 360).

[57] Successful actors sometimes obtained special stipulations. Gene Kelly asked the studio not to retouch his scar on any photograph, and Ann Sheridan, after she had been heavily advertised as the 'Oomph girl', obtained the right to veto all descriptive phrases about her made by Warner's publicity department (Gaines 1991: 148–59).

[58] Leiss, Kline and Jhally (1990: 270). Testimonial advertising is persuasive, because the image of the star does not give information, especially in this period, as stars were not legally required to have used the product regularly. Only in 1980 did the Federal Trade Commission require that celebrity endorsers had to be 'bona fide users' (Gaines 1991: 159–60).

[59] Putting Mickey Mouse on a T-shirt may enable the manufacturer to triple the price, while the shirt's inherent quality remains unchanged; only its perceived quality has increased.

[60] Low (1949: 108, 126); Sadoul (1972: 46–7).

Britain were American. The still-anonymous Mary Pickford became hugely popular there in 1910 and, when thousands of fans pressed for her name, the distributor of Pickford's films quickly christened her 'Dorothy Nicholson'. In late 1911, the Hepworth company, in a radical shift of strategy, adopted the star system. Previously unadvertised players suddenly covered whole film posters. 'The same players that had been with the company for several years without comment, were forced before the public on every possible occasion, on hoardings, in newspapers, on the walls of the underground.'[61] Nevertheless, Hepworth was the exception, and most companies did not develop their own stars. In 1913, the London Film Company hired American actors, writers, and producers to make British films. In the 1920s, British & Colonial hoped to attract more US revenues by putting American stars under contract. A decade later, producer Alexander Korda did the same, though by then a few British stars, such as Gracie Fields, who earned about £40,000 per picture,[62] were obtaining substantial sums.

Possibly because of the small scale of the industry in Britain, film producers often 'rented' established stars from the stage. In 1911, Sir Herbert Tree received £1,000 for one day of acting in *Henry VIII*, and the producer highly publicised the film. To increase demand the producer announced that he would burn all twenty copies after six weeks (and subsequently had to suffer the rage of exhibitors when he had second thoughts).[63] At the time, £3,000 to £5,000 was not an exceptional fee for a famous stage actor or other well-known person for a starring role in a film. In 1919, the boxer Georges Carpentier, for example, received an offer of £6,000.[64] Of all registered stage actors in Britain between 1918 and 1936, as many as 65 per cent had worked for the movies.[65]

Stories became important from the early 1910s onward. The London Film Company promised to use the proceeds of a £40,000 public offering to buy the rights to famous plays and novels. Even in the 1920s, film rights commanded substantial sums, and ten years later story prices had increased dramatically; Herbert Wilcox had to pay £20,000 for the rights to the hit musical *Chu Chin Chow*, although average prices were lower. In the late 1920s, the price for an average play or novel ranged between £1,000 and £3,000, with lesser-known works fetching £400 to £1,500. An average original screenplay sold for about £350.[66] In the early 1930s, 490,000 francs (£6,000) were paid for Henri Bataille's *The Private Life of Don Juan*, £4,000 for Rudyard Kipling's *The Elephant Boy*,

[61] Low (1949: 8). [62] Richards (1994: 164). [63] Low (1949: 95–6).
[64] Low (1971: 275). [65] Sanderson (1984: 215). [66] Low (1971: 133, 277).

and £8,000 for *The Scarlet Pimpernel*.[67] Some say that Alexander Korda acquired the rights to *Lawrence of Arabia* for £30,000, on the condition that they would never be transferred to an American company.[68]

France

In France, the main film companies had roots in the fine machinery industry, and they used technological features to lure the audience. The Pathé company pioneered coloured film, and by 1910 the three main French companies – Pathé, Gaumont, and Éclair – each had its own colouring process. Some also pioneered sound pictures, and Gaumont tried in vain to market its sound system in the United States in 1908.[69] In 1908, Éclair noticed the popularity of the *Nick Carter* dime novel series and acquired the film rights.[70] Soon its French competitors launched their own serials, and American companies adopted the format in 1912.

Before 1914, the star system did not play a large role in France. Actors were predominantly anonymous; posters did not feature their names, and Gaumont even ordered its illustrators not to draw any recognisable facial features on players, so that the public would not identify them.[71] The 'stars' of French films were fictional characters – mainly comic ones; it was the fictional name that was advertised and publicised, while the player could even be changed if necessary. As in Britain, however, companies occasionally used established stage stars, and then they prominently advertised their names.[72] As more and more fan mail piled up, film companies realised that identifiable stars might have some advantages. Gaumont, for example, received 300–400 letters a day for its star Renée Navarre. In 1913, it featured the star Musidora, who received the huge sum of 100 francs a day.[73] With exceptions such as D. W. Griffith or Thomas H. Ince, companies did not advertise the names of directors.[74]

[67] London Film Productions Ltd. weekly cost statement, 25 May 1935; Sir David Cunynghame Collection, British Film Institute; Letters Alfred Bloch, Paris, agent for the executors of Henri Bataille, to London Film Production Ltd., 17 August 1933 and 25 August 1933; London Film Productions Collection, British Film Institute, File F11.

[68] Audience Research Institute (ARI), 'Report XXVII: Lawrence of Arabia' (1940). Brian McFarlane (1986) and Geoff Brown (1986) give an overview of British adaptations.

[69] Guy (1976: 100–9).

[70] As mentioned in Chapter 3, Nick Carter was originally published in the United States by Street and Smith, which licensed it to the German Eichler, which in its turn marketed it in Paris through its French subsidiary (Le Roy and Billier 1995: 19).

[71] Aimone (1997: 84).

[72] Abel (1994: 41). [73] Aimone (1997: 87). [74] Bousquet (1981).

During the 1910s, American stars became popular in France. In late 1915, Pearl White, starring in the serial *Mystères de New York*, became so famous that her costume – a simple skirt, black vest, narrow-brimmed hat and white gloves – became a fashion item among Parisian women.[75] In the 1920s, as in Britain, some companies imported American stars, and some actors who saw their fame decline in the United States migrated to France to boost their careers – or end them.[76] French observers lamented that their industry did not develop stars and remained unwilling to invest in long-term contracts; in France, a star's contract covered at most three films.[77]

French companies preferred stories over stars, especially in the early days. In 1897 Lumière filmed *Vues représentant la Vie et la Passion de Jésus-Christ*.[78] Trading on the incontestable brand recognition of the New Testament, the film became hugely popular, and the American rights fetched $10,000. The lack of copyright on the material was also a drawback, however, as numerous imitations were promptly filmed. In 1908, Films d'Art started making films based on well-known French plays and novels and using famous stage actors. The fees involved were so large that the company came close to bankruptcy, and Pathé practically took it over. From 1909, the Société Cinématographique des Auteurs and Gens de Lettres, also backed by Pathé, focused exclusively on famous plays and novels, for which it had contracts with three hundred authors.[79] They confined stage actors to minor roles for publicity purposes to keep costs down. In 1909 Éclair founded a competing subsidiary, Association Cinématographique des Auteurs Dramatique, which concentrated on classic plays and novels until 1911, when it shifted toward contemporary, popular works, especially police dramas and thrillers.[80]

French film companies invested less in publicity than their US counterparts did – at least after the First World War. A study by Henri Bousquet shows that in 1919 about 30 per cent of French films were heavily advertised in the trade press. By 1920–21 the proportion had halved, to just over 15 per cent, and in 1922 dropped further to about 10 per cent. Comparable figures for American films in France are lacking, but it is likely that they were advertised more heavily.[81] The French companies' declining outlays on advertising fit the pattern observed in the previous two chapters, in which American companies

[75] Abel (1984: 10). [76] Hammond (1983). [77] Aimone (1997: 86); Crisp (1993: 31).
[78] Sadoul (1972: 20). [79] *Ibid.*: 70, 73; Abel (1994: 40).
[80] Le Roy and Billier (1995: 36–7). [81] Bousquet (1981: 69–74).

increased their outlays on creative inputs and their promotion, while European companies could not keep up and were pushed to the margins.

At the cross-roads of production strategies and consumer preferences

The hero was distinguished by his achievement, the celebrity by his image or trademark. The hero created himself; the celebrity is created by the media. The hero was a big man. The celebrity is a big name . . . . A sign of a celebrity is often that his name is worth more than his services. Daniel Boorstin

While the previous section sketched out the development of films into heavily branded products, this section will examine the quantitative evidence in detail, to get microeconomic insight into the importance of branding, and in what ways branding techniques were reflected in production outlays and market research.

Paying creative inputs not only for their quality but also for the market value of their popular appeal should produce widely divergent payments rather than convergence to an industry average.[82] In addition, branded creative inputs (such as stars) should receive disproportionately higher pay than unbranded creative inputs (such as other players).

Budget breakdowns are lacking for most films, but table 8.1 presents data on some American films for which information is available. The data show that the share devoted to players varied substantially, roughly between 10 and 25 per cent. The share for copyrights fluctuated even more, from close to zero to about 18 per cent. Together, creative inputs made up 20 to 60 per cent of the budget, though for productions over $200,000 the lower bound to this share lies around 30 per cent.

These examples give information only on the order of magnitude, and breakdowns must have varied widely from case to case. As each film is an individual project, it is difficult to view these specific amounts as representative. In 1915 and 1916, for example, the average budget of an Artcraft Pictures film containing Mary Pickford was $165,000–$170,000, of which an unprecedented 75 per cent was Pickford's salary.[83] The average studio production costs shown in table 8.1 help to classify the cases as low-, middle-, or high-budget and so give some scale against which to measure individual cases. The average industry production cost in 1927 was $134,343, confirming the low budgets of the two MGM

[82] Pay also depended on luck, negotiation skills and competitive bidding. Convergence to an industry average does not presuppose an equal distribution of acting quality among all creative inputs. It does, however, presume a flatter distribution of acting quality among stars, at least equal enough to have their salaries lie in the same ballpark.

[83] Koszarski (1990: 266).

Table 8.1 *Case studies of the share of creative inputs in US film production costs 1917–1937*

Year	Company	Title	Actors		Extras	Director	Scrpl.	Copyr.	Total	Current $	1927 $	Av. studio cost ($1927)
			All	Lead								
1917		Average picture	47.2	16.9	7.3	6.0			60.5	41,350	53,701	
1917		Average picture	48.0	33.9		16.9	5.6		70.6	17,700	22,987	
1922	Universal	*The Way Back*	15.2		2.6	14.1	11.8		43.6	34,212	35,270	
1924		Estimate of average negative cost	25.0			10.0	5.0	5.0	45.0			
1926	MGM	*Mandalay*	17.3		4.0	17.3	0.7	17.3	56.7	83,952	82,306	253,805
1926	MGM	*The Scarlet Letter*	16.6		6.3	16.6	4.8	16.6	61.0	215,840	211,608	253,805
1927	MGM	*Wyoming*	12.6	7.5	13.1	6.1	0.5	0.5	32.7	57,947	57,947	276,647
1927	MGM	*Spoilers*	11.3	2.3	3.5	13.4	2.4	2.4	33.1	22,697	22,697	276,647
1930	RKO	*Swing High*	13.8		8.0	3.4	4.2	0.5	30.0	274,622	286,065	363,368
1930	RKO	*Night Work*	13.4		5.9	7.1	1.9		28.2	180,354	187,869	363,368
1930	RKO	*Her Man*	11.9		8.4	7.0	5.5	1.6	34.5	371,551	387,032	363,368
1930	RKO	*Holiday*	19.6		2.9	5.1	2.1	11.4	41.1	306,879	319,666	363,368
1930	RKO	*Her Private Affairs*	11.4		3.0	7.6	2.4	3.0	27.4	199,188	207,488	363,368
1930	RKO	*Paris Bound*	12.7		2.8	8.8	1.0	5.6	30.9	267,777	278,934	363,368
1930	RKO	*This Thing Called Love*	18.5		1.6	6.6	1.5	5.5	33.8	225,869	235,280	363,368

Table 8.1 (*cont.*)

Year	Company	Title	Actors		Extras	Director	Scrpl.	Copyr.	Total	Current $	1927 $	Av. studio cost ($1927)
			All	Lead								
1932	RKO	*Truth about Hollywood*	38.7	30.2	2.3	6.3	3.7	1.0	52.0	411,677	521,110	202,956
1932	RKO	*Lady with a Past*	26.6	20.7	4.9	11.1	6.0	2.8	51.4	541,076	684,906	202,956
1934	MGM	*Manhattan Melodrama*	24.5		10.3	4.2	7.3	7.3	53.7	311,540	404,597	596,486
1934	MGM	*Copperfield*	6.9		3.0	16.7	5.1	5.1	36.8	678,946	881,748	596,486
1937		"Average film"	25.0			10.0	7.0	5.0	47.0			
Average all films (excluding estimates)			16.9	15.2	5.2	9.5	3.8	5.8	40.4	261,508	300,283	

Notes: all columns except the last three are percentages.
All Actors = all major roles (the main characters in the film).
Lead is included in 'All' actors.
Extras = Extras and small roles.
Scrpl. = Screenplay.
Copyr. = film rights to the literary work on which the film is based.
Total = share of all these creative inputs in total production costs.
$ = Total production costs in current dollars.
$ 1927 = Total production costs in 1927 dollars.
Av. studio cost = average production costs for the respective studios during the respective year, based on *all* films produced.
Sources: Bächlin (1945); Kennedy (1927); Schatz (1988); Koszarski (1990); Jewell (1994); Glancy (1995).

films listed for that year. In 1929 and 1931, the average costs were $186,230 and $175,495, and we can see that even the cheapest RKO movies were at the industry average and their others substantially above it.[84] In 1933 the industry average was $159,427, placing the two 1934 MGM budgets far above average.

For Britain, few budget breakdowns are available. American observers noted that in 1929 the average British film budget included about 20 per cent spent on actors, 10 per cent on the director, and 6.7 per cent on the screenplay and copyright.[85] Table 8.2 shows the breakdowns of four high-budget films by London Film Productions in 1934. Even compared to US standards, these films were very expensive. The share of creative inputs varied considerably, between 27 and 42 per cent.

Fifteen breakdowns were found for France, nearly all of them from Albatros, a medium-sized producer (see table 8.3). The films listed cover only about 2 per cent of all films made in France between 1924 and 1936, though Albatros was probably quite characteristic of film companies in interwar France: film production was highly fragmented, but film distribution was highly concentrated. The average budget in France in 1923 was 410,000 francs, and in 1938 about 1.9 million francs, putting the 1924 films and the two 1930s films at or above average. The share of creative inputs fluctuated between 15 and 35 per cent, significantly lower than in the American cases. Total costs were also substantially lower than in the US studies, which suggests that both absolutely and relatively French companies spent less on creative inputs.[86]

How important were creative inputs in persuading consumers to attend particular films? Leo Lowenthal pinpointed a remarkable shift in consumer interest toward creative inputs, which occurred exactly when the feature film, with its 'famous players in famous plays', rose to dominance. Analysing biographical articles in popular US magazines, he found that, between 1901 and 1914, 74 per cent of subjects came from business, politics, and the professions, whereas after 1922, more than half came from entertainment, especially from light entertainment and sports.[87]

[84] All in 1927 dollars.

[85] "The European motion picture industry in 1930," in *Trade Information Bulletin*, 752 (May 1931).

[86] Market size matters less for these differences, as films were internationally traded. French companies before the 1930s, for example, made the great majority of their revenues outside France (Bakker 2004b).

[87] Lowenthal (1961). Apparently, the shift coincided with the one that Leiss *et al.* (1990) note for star advertising. Boorstin (1962) draws especially on Lowenthal when concluding that a celebrity is 'a person who is known for his well-knownness'. See also Caves (2000: 76).

Table 8.2 *Case studies of the share of creative inputs in production costs of six British films, 1931–1936*

Year	Co.	Title	Actors		Extras	Dir.	Scrpl.	Copyr.	Total	Budget (£)	Budget (£1927)
			All	Lead							
1931	G	*Hindle Wakes*	14.6			7.0	18.9		40.5	28,375	32,244
1932	G	*Murder at Covent Garden*	6.4		4.3	2.6	4.3		17.4	11,750	13,663
1934	LFP	*The Scarlet Pimpernel*	12.9		3.8	8.9	3.1	5.4	34.1	150,680	179,381
1936	LFP	*Things to Come*	5.3		5.0	13.9	2.6	0.4	27.1	250,283	284,413
1936	LFP	*Moscow Nights*	22.8		1.0	10.5	0.1	7.4	41.8	47,439	53,908
1936	LFP	*The Man Who Could Work Miracles*	11.6		2.2	13.1	4.8	0.0	31.7	105,805	120,233

Notes:
Column headings: see table 8.1.
G = Gainsborough Pictures Ltd.; LFP = London Film Productions, Ltd.
For the first two films, only aggregate figures for screenplay and copyright are available.
Sources: Aileen and Michael Balcon Collection, British Film Institute, File A57; David Cunynghame Collection, British Film Institute, File Weekly Production Costs – All current pictures.

Table 8.3 *Case studies of the share of creative inputs in French film budgets and production costs, 1923–1939*

Year	Company	Title	Actors		Extras	Director	Screenplay	Copyr.	Total	Costs (1927 frs.)	B
			All	Lead							
1925	Films Diamant	*Paris qui Dort*	17.1	5.7	11.4	4.6	2.1		35.3	116,000	1
1923	Albatros	*Kean*	22.5		5.8	9.2	1.8		39.2	6,311,000	1
1924	Albatros	*La Dame Masquée*	7.2	1.9	13.1	2.5	0.3		23.2	461,000	1
1924	Albatros	*Le Lion des Mogols*	10.8	5.8	9.2	3.4	0.2		23.5	1,077,000	0
1924	Albatros	*L'Affiche*	11.7	7.0	8.4	5.1	1.3		26.5	570,000	0
1924	Albatros-Cinegraphic	*Feu Mathias Pascal*	17.9	9.7	6.9	7.7	0.8	8.2	41.5	897,000	1
1924	Albatros	*La Proie du Vent*	17.7	6.5	9.5	7.2	2.2		36.6	1,004,000	1
1925	Albatros	*Les Aventures de Robert Macaire*	12.8	6.4	7.9	6.3	1.3		28.2	1,039,000	1
1927	Albatros	*Le Chasseur de Chez Maxim's*	16.3	7.1	8.4	2.2	4.8		31.8	1,135,000	1
1927	Albatros	*Un Chapeau de Paille d'Italie*	18.4	7.1	1.8	5.9	5.9		32.0	842,000	1
1927	Albatros-Julisar	*La Comtesse Marie*	6.6	2.7	4.3	4.7		4.3	19.8	1,051,000	0
1928	Albatros-Sequana	*Les Deux Timides*	11.8	4.4	4.4	13.1	2.2		31.5	913,000	1
1930	Albatros	*Procureur Hallers*	7.8	3.1	4.7	7.8	1.3	1.3	22.8	972,000	1
1931	Albatros	*Un Coup de Téléphone*	11.7		5.7	2.2	6.2		25.9	1,010,000	0
1931	Albatros	*Le Monsieur de Minuit*	7.9		2.5	5.7	13.1		29.2	1,135,000	0
1932	Albatros	*Il a été Perdu un Mariée*	12.0		3.2	3.5	5.7		24.4	924,000	0
1934	Albatros	*La Porteuse de Pain*	20.3	8.0	3.8	5.2	1.6	10.5	41.5	1,640,000	1
1934		Average film	25.0			6.8	1.7	1.7	35.3		
1936		Major film of average quality	20.0				2.5	2.5	25.0		

Table 8.3 (*cont.*)

Year	Company	Title	Actors							Costs	
			All	Lead	Extras	Director	Screenplay	Copyr.	Total	(1927 frs.)	B
1936	Albatros-SFPF	*Les Hommes Nouveaux*	18.6	11.0	5.7	7.0	6.6		38.0	2,678,000	1
1936	Albatros	*La Grande Illusion*	25.2	6.5		4.6	2.5		32.4	1,815,000	1
1936	Albatros	*Les Bas Fonds*	11.4		3.5	4.9	13.3		33.2	2,397,000	1
1939	Albatros	*A Bon Chat Bon Rat*	30.2	13.8	3.4	1.7	3.4		38.8	2,234,000	1
Films for which information is incomplete											
1924	Albatros	*L'Heureuse Mort*	11.5		9.8		1.5		22.8	506,000	0
1926	Albatros	*Carmen*	6.9				0.2		7.1	624,000	0
1927	Albatros	*Souris d'Hotel*	9.7	3.9	6.1				15.8	619,000	1
1928	Albatros	*Les Nouveaux Messieurs*	11.6		11.2		5.4		28.2	1,385,000	0
1929	Albatros – Wengeroff	*Cagliostro*	22.4				1.8		24.1	479,000	1
1931	Film Sonor – SDFS	*A Nous la Liberté*	4.0		7.0	7.0			18.0	2,759,000	1
Average all films (excluding estimates)			14.1	6.5	6.6	5.5	3.6	6.0	28.6	1,355,000	

Notes: Column headings: see table 8.1. Total production costs rounded at nearest 1,000 francs. Average for total creative inputs does not include incomplete budgets or costs.
In B column, rows with 1 list budgeted amounts, rows with 0 list actual production costs.
Amounts for *Procureur Hallers* converted from reichsmark; *La Grande Illusion* and *A Bon Chat Bon Rat* have never been made.
For *Le Monsieur de Minuit*, *Les Bas Fonds* and *A Bon Chat Bon Rat* costs for screenplay include costs for copyright.
Sources: Collection Albatros, Bibliothèque du Film, Paris; Collection René Clair, Bibliothèque d'Arsenal, Paris; Bakker (2004b); Bächlin (1945).

If film studios were successful in using creative inputs to establish brands, then these inputs should be the main incentive for people to see a particular film.[88] How then did consumers make their choice? Sources on consumer preferences divide into three categories. The oldest are the polls conducted by fan magazines, which started as early as 1909.[89] Their representativeness is often questionable, as readers had to send in postcards, and the subjects covered were limited. From the early 1920s onward, sociologists, psychologists and citizens' organisations undertook surveys on the social effects of cinema, especially on children.[90] The third and most useful source is market research, which was done only sparsely before 1940.[91] For Britain, the tabulated responses to surveys conducted by the Bernstein cinema chain cover movie-goers in and around London from 1927 to 1946.[92] For the United States, the market research reports of Audience Research, Inc. (ARI) are the major source. George Gallup started the company in Princeton in 1938 and conducted research throughout the 1940s.[93]

Universal Pictures also undertook some primitive market research, beginning in 1922. The company ran a weekly advertisement in the *Saturday Evening Post*, signed by Universal's president Carl Laemmle, asking readers to state their favourite stars and to answer some questions. Once, Laemmle even placed a job advertisement for a 'Master Psychologist' who could 'analyse plot-situations' and 'forecast public reaction'.[94] Reportedly, Universal received about a hundred letters a day and built

[88] Some film scholars, for example, Koszarski (1990:25–34), have argued that consumers went to the cinema primarily to be away from home, in a luxurious and sociable environment. Choosing to go to the cinema as opposed to another activity is not the same as deciding which film to see. The choices are consecutive, not mutually exclusive. Consumers who could attend only one cinema could still choose between going or waiting for the next movie.

[89] *Moving Picture World*, 1909; see also, for example, 1930s British polls in *Picturegoer*.

[90] For the US see, for example, Mitchell (1929) and the studies sponsored by the Payne Fund, such as Blumer (1933). For Britain, see the mass-observation studies of the late 1930s and early 1940s, some of which are published in Richards and Sheridan (1987). An early example is Altenloh (1913), on cinema-going in Mannheim.

[91] Corley (1987) gives an overview of market research in Britain before 1940. Other early case studies can be found in Jones (1994); Collins (1994); Corley (1994); Ward (1994).

[92] In about ten cinemas outside the West End. Returns ranged between 1,500 and 2,500. The main purpose was to garner publicity by extensively announcing the results in the press. Bernstein even offered a price for the 'most complete' form returned. Obtaining market information seems to have been only a secondary purpose. On Bernstein and his cinemas see Moorehead (1984); Eyles (1998), and the second section of Chapter 10, below. Another form of primitive market research were polls among exhibitors by the trade press, such as the yearly polls of the *Motion Picture Herald* in the US from 1915 onwards, and of *La Cinématographie Française* in France between 1936 and 1938 (Billard 1995: 211–19, 660–5).

[93] For a detailed history see Ohmer (1997).

[94] *The Saturday Evening Post*, 21 July 1921.

Table 8.4 *Reasons to visit the cinema among school children in Montclair, US, 1933*

Reason	Total	Boys	Girls	Sen. high
For the actor	15.8	14.9	16.6	21.2
For the actress	14.1	11.0	17.1	19.8
Because the picture is good	14.4	15.2	13.6	14.5
Know and like story	12.8	12.7	12.9	13.0
Because you like the preview	11.9	13.0	10.8	12.0
Talk wih parents, then decide	11.7	11.0	12.5	3.3
Read about it in movie magazine	6.0	5.8	6.1	6.1
Because you like the title	4.6	5.6	3.6	3.0
Your crowd wants to go	3.0	3.6	2.4	3.7
Because you like the poster	2.3	3.0	1.6	1.0
Your habit to go	2.2	2.7	1.7	1.7
Favourite theatre	1.4	1.6	1.1	0.7
Total	100.0	100.0	100.0	100.0
Totals (absolute)	13,561	6,672	6,889	3,985

Note: all values in percentages, except last row, of number of respondents.
Source: Motion Picture Council (1933).

a substantial mailing list, from which it selected three hundred people whom it consulted frequently. When asked what influenced them most to go to see a motion picture, the respondents answered, in order of importance: the star, the 'popularity of story, book or stage play', the director, and the author.[95]

In 1933 a more professional survey of 5,130 children in Montclair, New Jersey, also found that, besides the picture itself, stars and stories were the main reasons to visit the cinema (table 8.4). The senior high school students, who probably best reflected the general population, had the highest responses in this category. A 1929 survey of 10,052 children in Chicago, Ill. asked how the respondent selected a movie. Again, stars and stories – if 'title' is considered related to story – were among the main methods of selecting a film (table 8.5).[96]

The 1927 Bernstein questionnaire (table 8.6) showed similar results for Britain. Courtesy and service were reasons to visit the cinema for only 9 per cent of respondents – and probably not even the main one for that group, since more than one reason could be marked. Apart from the

[95] Lewis (1930: 132–7).
[96] Motion Picture Council of the Parent Teacher Associations of the Public Schools (1933); Mitchell (1929: 161). The data did not show marked gender differences, but indicated that women were slightly more likely to go to see a star and that publicity influenced men slightly more than women.

Table 8.5 *Methods used by children to select movies they attend, Chicago, 1929*

	Representative sample			Unrepresentative	
Method used	Total	M	F	Highsc.	Total
Newspapers	31.8	31.2	32.2	32.0	30.2
Title	25.2	24.1	25.9	26.5	24.8
Actors and actresses	17.1	14.6	18.7	20.0	14.0
Pictures in lobby of theatres	12.7	15.8	10.8	7.6	16.4
Recommendations of friends	8.6	9.7	7.9	10.7	8.3
Previews	3.3	3.9	2.9	2.0	4.3
Selected by parents	1.3	0.7	1.6	1.2	2.1
Total	100.0	100.0	100.0	100.0	100.0
Totals (absolute)	3,641	1,373	2,268	2,604	7,526

Note: all values in percentages, except last row, of number of respondents.
Source: Miller Mitchell (1929: 161).

Table 8.6 *Reasons for English filmgoers to visit the cinema, 1927*

Reason	Male	Female	Unknown	Total
The picture	18.5	18.2	18.1	18.3
The star	14.2	14.9	15.3	14.5
The orchestra	14.3	12.8	14.9	13.8
The story	12.6	12.5	13.8	12.7
The varieties	11.3	10.3	10.0	10.8
Courtesy and service of the staff	9.2	9.4	8.3	9.2
Prices of admission	7.7	8.1	6.2	7.7
The producer	6.9	7.9	7.9	7.4
Publicity	5.3	5.9	5.5	5.6
Totals	100.0	100.0	100.0	100.0
Totals (absolute)	3,222	2,378	470	6,070

Note: all values in percentages, except last row, of number of respondents.
Source: Bernstein Questionaire 1927, question 2: 'What attracts you to the cinema?'; boxes Bernstein Questionnaire, Sidney L. Bernstein Collection, British Film Institute, London.

picture itself, first the star and then the orchestra and the story were the most important reasons for going to see a film.[97] A study by Annette Kuhn done between 1994 and 1996 confirms these findings. Kuhn asked elderly Britons about their cinema-going habits in the 1930s. The

[97] During the silent era, the orchestra and variety acts were important; after these disappeared, stars and stories must have become even more important.

appearance of their favourite stars was an important reason to see a film for 75.3 per cent, while 53.2 per cent said publicity influenced their choice. 'Good acting/liked stars' was the most important reason why films made an impression on respondents (40.6 per cent), followed by the story (35.0 per cent).[98]

Stars

In mid-1929, 277 players were under long-term contract in Hollywood: the total stock of major and minor stars.[99] The available budget breakdowns for US films (see table 8.1) supply scant information on the pay of the leading player, the star, but it is clear that stars received disproportionately more than their fellow actors. Sometimes the star's salary was half of all the actors' pay combined. The French case studies reveal slightly more: in the nine cases, the star received about as much as the rest of the cast combined. This supports the notion that stars' pay was not only for their service as an actress/actor (for example, payment according to a union/professional scale), but also for the popular appeal of their name. Even if the star worked a few days more than other players, the degree of difference remains striking.

Harvey Lehman's research on the box office potential of stars in relation to their age from 1915 to 1939 confirms this point.[100] He found that women reached their highest box office potential between 25 and 29 years of age, and men between 30 and 34 (see figure 8.1). If companies were basing payment of stars only on the quality of their acting, the distribution would have been more even, or would have peaked at a later age, because quality and skill generally increase with age in specialist occupations such as these. Directors reached their peak between 35 and 39 years. One might argue that talent is bound to be young in an emerging industry, but because the profession started before 1900, the oldest young entrant would have been 60 years old by 1939. If box office potential depended on quality, one would expect veterans to have won more top slots over time and that the peak would be less pronounced or would occur at a later age.

[98] Kuhn (1999). Respondents could mark more than one: 31.7% saw whatever was on; 26.3% used recommendations of friends (*Ibid.*: 536). Other categories were 'Music and/or dancing' (26.3%), 'Fantasy/escape/captivating' (18.1%), 'Realistic/true/identified with story/characters' (17.5%); *Ibid.*, 539. A current US study, allowing respondents only one answer, found a similar result, with 22% choosing a movie by the star, 18% by publicity and 17% by the story (De Silva 1998).

[99] *Motion Picture News*, 8 June 1929, 1943.

[100] Lehman (1941). Pay of average actors could not decrease greatly with age, as their income would not be far above union pay scales to begin with.

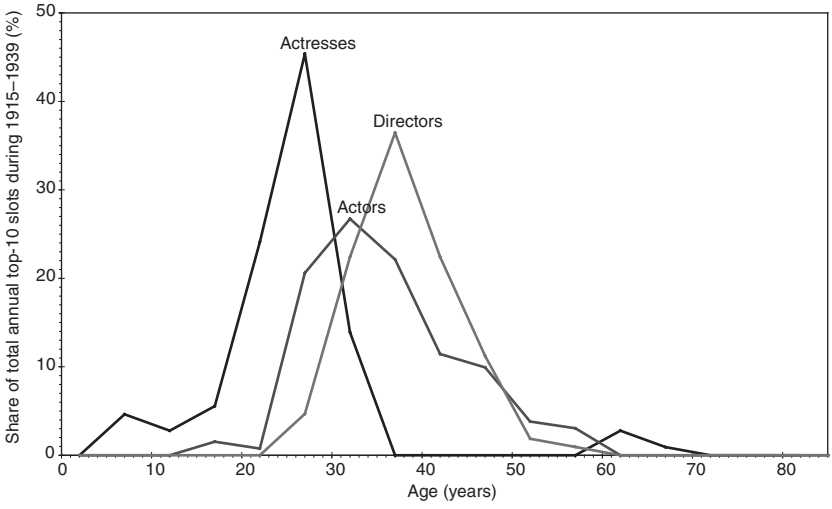

Figure 8.1 Age of the annual top-ten box office earning stars in the US between 1915 and 1939

Note: Each year that a star features in the top ten, she or he will be included. This means that some stars are included several times in this figure.

Source: Lehman (1941).

The existing data on the pay of actors/actresses and directors are also sparse, but available evidence from the late 1910s and 1920s confirms the high level of divergence.[101] As expected, the stars' salaries did not hover around an average, but diverged widely, even among the famous few. Between 1916 and 1923, stars' pay increased substantially across the board – for the top eighteen stars from $73,968 to $195,918 (in constant dollars). Income inequality among the stars remained remarkably constant, at a Gini-coefficient of 0.46 (see figure 8.2 and table 8.7).[102] Interestingly, none of the stars in the 1916 list appeared in the 1923 list: stars were short-lived brands. Only four of the sixteen stars in 1916 were female, whereas in 1923 fifteen out of twenty-six were female, and women filled the top three slots. The top directors' pay during 1926 shows an income distribution similar to that of players (Gini = 0.47).[103]

[101] Koszarski (1990: 114–16, 212–13).

[102] This does not mean that income inequality for all players remained constant. Making the comparison over equal ranks (18) yields similar results, inequality being slightly more in 1923 (Gini = 0.47). A Gini-coefficient of zero means perfect equality, a Gini of one perfect inequality.

[103] For eight top directors, the Universal researchers could not state a fee; some of those, for example, Maurice Tourneur, may have filled top slots.

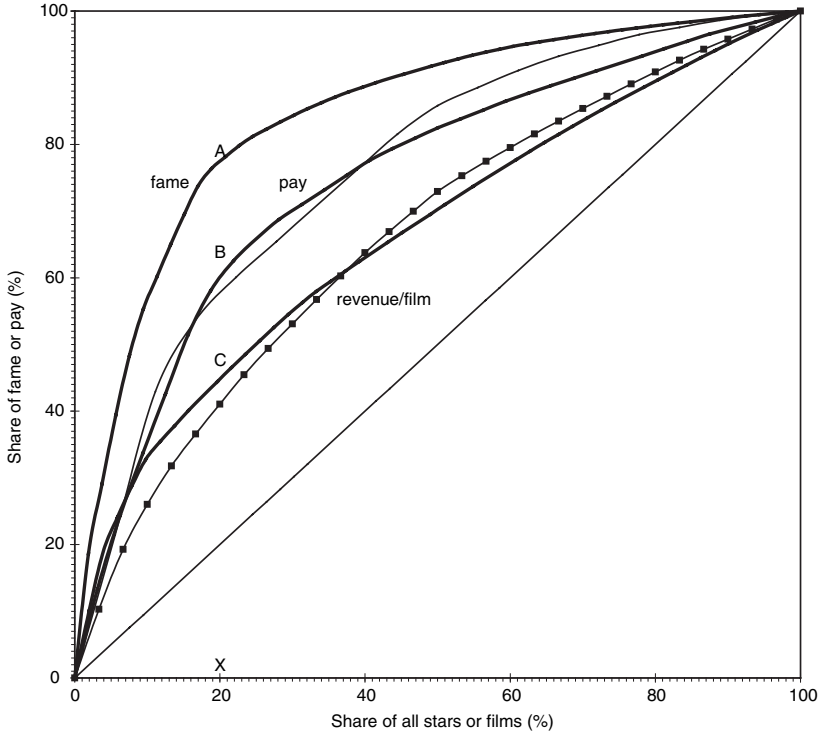

Figure 8.2 Distribution of fame and pay among creative inputs and films in Britain and the US, 1916–1932: Lorenz-curves

Key: Fame: distribution of fame of the top film actresses among British cinema-goers in 1932, polling data.

Pay, thin line: distribution of pay among the top film actors and actresses in US, 1916.

Pay, bold line: distribution of pay among the top film actors and actresses in the US, 1923.

Revenue/film, bold line: distribution of tickets sold per film among British cinema-goers in 1932, attendance data.

Revenue/film, thin line: distribution of box office revenue of top-30 films released by MGM, Warner Brothers and RKO in 1932 in the US.

Reading examples:

– In 1932, about 20 per cent of actresses (X) held about 78 per cent of the fame among British cinema goers (A).
– In 1923, about 20 per cent of American star actors and actresses (X) received 61 per cent of stars' salaries (B).
– In 1932, about 20 per cent of the films (X) sold 45 per cent of the tickets (C).

Note: The diagonal is the hypothetical line if fame and pay were distributed evenly among the stars or films.

Source: See table 8.7.

Table 8.7 *Distribution of popularity and pay among top creative inputs and top films, 1916–1941*

Year	Input or product	Measured	Gini	C4	C6	C8	HH	Ranks	N
1916	Actors/actresses	Pay	0.46	60.1	70.8	81.5	1238	18	18
1923	Actors/actresses	Pay	0.46	42.6	58.1	65.9	674	32	32
1926	Directors	Pay/week	0.47	30.9	39.1	46.1	452	57	57
1927	Directors	Poll	0.55	60.5	72.0	79.1	1066	24	c. 2,000
1932	Directors	Poll	0.58	58.9	66.4	72.4	1590	31	c. 2,500
1934	Directors	Poll	0.60	39.7	53.0	62.2	637	42	2,460
1941	Directors	Poll	0.57	70.1	79.7	85.9	1719	19	1,000
1927	Actresses	Poll	0.66	36.4	45.0	51.7	570	79	c. 2,000
1932	Actresses	Poll	0.67	48.4	60.2	69.5	803	53	c. 2,500
1934	Actresses	Poll	0.61	34.9	44.9	52.9	494	65	2,460
1934	Minor actresses	Poll	0.33	27.7	35.5	42.3	354	46	2,460
1931	Actresses	Poll	0.49	57.9	72.6	82.5	1317	19	2,580
1940	Actresses	Poll	0.32	16.5	22.8	28.6	222	62	1,000
1927	Actors	Poll	0.61	29.0	39.7	48.3	401	73	c. 2,000
1932	Actors	Poll	0.66	40.7	50.8	56.9	612	74	c. 2,500
1934	Actors	Poll	0.56	27.7	36.8	44.6	372	73	2,460
1934	Minor actors	Poll	0.21	18.0	23.9	29.7	255	47	2,460
1931	Actors	Poll	0.34	45.6	59.8	70.9	820	19	2,580
1940	Actors	Poll	0.25	19.5	26.8	33.7	302	41	1,000
1932	Films in UK	Attendance	0.31	28.8	35.4	40.1	351	51	c. 2,500
1932	Films in US	Revenue	0.29	31.8	41.1	49.4	473	30	30
1941	Comics	Poll	0.61	34.2	42.2	48.2	441	82	1,000

Key: Gini = Gini-coefficient (the area between the Lorenz-curve and the diagonal divided by the total area above the diagonal)
C4, C6, C8 = combined share of 4, 6, 8 largest inputs.
HH = Herfindahl Hirschman index (sum of squared shares of each input).
Ranks = the number of creative inputs (and thus ranks) in the rank order.
N = number of respondents.
Sources: Koszarski (1990); Jewell (1994); Glancy (1992); Glancy (1995); Bernstein Cinemas; Edinburgh Cinema Inquiry Committee; Audience Research Institute.

The huge pay differences among stars suggest a similar degree of disproportion in their appreciation by consumers. The Bernstein polls of 1927, 1932 and 1934 indicate that the word 'star' lived up to its metaphor in this sense and that fame decreased disproportionately from larger to lesser players (see table 8.7).[104] For example, in 1932 the most popular star, Norma Shearer, was named by 18.5 per cent of respondents; the second, Constance Bennett, was named by 10.5 per cent, and the sixth, Greta Garbo, by only 5 per cent. The popularity distribution is quite similar for all three years and for both males and females, the Gini-coefficient hovering between 0.56 and 0.66.

The popularity distribution was about twice as disproportionate as the pay distribution. Although the data-sets cover different stars, countries and periods, one can nevertheless speculate that this gap between popularity and pay distribution represented the extent to which the studios captured the rents of the stars' fame. The popularity of 'small parts players' (available for 1934 only) confirms these findings in that this group had a distribution more equal than that of the stars. Interestingly, when compared with the 1928 Universal poll in the United States, four of the ten most popular US male stars did not figure in the 1927 Bernstein poll, nor did three of the top ten US female stars.[105]

A 1931 survey of Edinburgh schoolchildren shows a more equal fame distribution among stars, with Gini-coefficients of 0.49 for females and 0.34 for males. These results are probably a result of the survey method: while Bernstein encouraged the respondents to give as many names as possible, the Edinburgh children could give only one.[106] The Bernstein data better reflect the 'brand-awareness' of a star, as most consumers have several stars by whom they are attracted. The highest-ranked star in a Bernstein questionnaire is not necessarily the most appreciated, but rather the star who is a favourite of the most consumers.[107]

A 1940 Gallup poll showed a more evenly divided distribution, resulting from a different survey method: consumers had to go through a list of names and mark, without ranking, all the stars who would induce them to go to the theatre. This method is bound to generate many hits for lesser stars, as refreshing the respondents' memories allowed them to mark as

[104] Under the question, the numbers 1 to 3 were printed, but many respondents filled in more names, meaning that, for practical purposes, respondents could fill in as many names as they liked.

[105] The actors were: Gary Cooper, Charles Rogers, Charles Farrell and Glenn Tryon; the actresses Dolores Del Rio, Joan Crawford and Mary Philbin. The small (c. 350) and self-selected sample may make the Universal survey less representative.

[106] Further, schoolchildren were less representative of the whole population.

[107] In theory, many different popularity indexes are possible, depending on the number of names respondents can give. Not restricting the number can give good information.

many names as they wanted. In the Bernstein case, the need for respondents to recall stars was bound to give advantage to the biggest stars.[108]

The use of genre as a way to brand films, instead of stars, was difficult, as a genre was non-proprietary, and could be imitated easily by competitors. Consumer surveys also show that consumer preferences for genres were not disproportionately distributed, as they were for stars. This means that, besides the difficulty of protecting a genre from imitation, it would have had limited power to reach strong brand-awareness among consumers and draw them to the particular film. The Bernstein surveys, for example, showed this quite equal distribution of consumer preferences among the different genres (table 8.8). These findings are confirmed by the Edinburgh survey and numerous other studies.[109]

Table 8.9 shows the popularity of stars among British cinema-goers over time. Over a period of a few years (1932–34 and 1934–37), 40 to 60 per cent of the stars remained in top positions, but the correlation between the exact rank was limited, at most 0.53. This suggests that fame was an unstable and impermanent attribute.[110] The percentages of overlap for 1927–32 were low because of the new demands posed by the advent of sound on directing, acting, and voice. Those for 1937–46 were low because of the long period considered.

The question that remains, then, is whether the popularity of stars could predict the popularity of films.[111] The data reveal that there was less equal distribution of films than of stars.[112] While 10–20 per cent of

[108] ARI, 'Audit of marquee values' (Princeton, N.J., April 1940). ARI handed the respondents a card with players' names and asked: 'I'd like you to look at every name and to imagine that it is on the front of a theater. Which name would most make you want to buy a ticket?' This question is different, and complicated to understand.

[109] E.g. 'National high school students' poll', 192, 'Market research of Kinema Theater, Fresno, California, 1924 and the Hepner Survey of 1928; all tabulated in Koszarski (1990: 29–31). See also Mitchell (1929: 167–168), and Handel (1950: 121). The Edinburgh school children's preferences were distributed similarly, but different genres filled the slots: e.g. 'war pictures', seventh (10%) in the Bernstein poll, were first (22%) in Edinburgh.

[110] ARI measured star popularity at short intervals, sometimes monthly or every three months, and observed considerable statistically significant fluctuations; *Ibid.*

[111] Both were measured by poll. However, respondents could fill in any stars' names but had to mark films from a list of those played at Granada cinemas. Because film popularity by ticket sales shows roughly the same Gini-coefficient as film popularity by poll, ticket sales data would probably have yielded the same findings.

[112] The respondents were also asked to write down their opinions. The data refer to the persons who saw the movie and did not write they disliked it. Since other cinemas were near, these data do not show all films at the respondents' disposal. For a detailed and comprehensive analysis of the number of screenings per film and per star in Britain during 1932–37, see Sedgwick (2000: 55–101, 180–205). Since his data are based on screenings, not polls or attendance figures, it is difficult to compare them with the data presented here.

Table 8.8 *Preferences of cinema-goers in and around London, 1927 and 1934*

1927					1934			
Genre	Male	Female	Unknown	Total	Genre	Male	Female	Total
Comedy	15.3	13.7	14.6	14.6	Musical comedy	17.4	18.1	17.8
Society drama	13.5	15.8	15.4	14.6	Thriller adventure	18.2	16.8	17.3
Adventure	15.6	12.8	12.3	14.2	Society drama	15.9	17.0	16.6
Mystery	11.8	13.6	14.8	12.8	Love romance	12.4	16.7	15.0
Melodrama	11.9	13.1	14.2	12.6	Comedy	16.6	13.5	14.7
Historical	12.5	11.1	11.5	11.9	Travel	10.0	9.6	9.8
War	12.0	9.9	9.8	11.0	War	9.6	8.3	8.8
Costume	7.4	10.0	7.3	8.4				
Totals	100.0	100.0	100.0	100.0	Totals	100.0	100.0	100.0
Totals (absolute)	2,615	2,008	479	5,102	Totals (absolute)	22,233	34,811	57,044

Source: Bernstein Questionnaires 1927 and 1934, question: 'What type of picture do you prefer?'; boxes Bernstein Questionnaire, Sidney L. Bernstein Collection, British Film Institute, London.

Table 8.9 *Popularity of creative inputs over time, Britain, 1927–1946*

	Years	1	2	3
Actresses	1927–1932	30.2	−0.62	53
	1932–1934	50.9	0.35	53
	1934–1937	64.4	0.37	45
	1937–1946	23.3	−0.67	30
Actors	1927–1932	28.8	0.24	73
	1932–1934	51.4	0.53	73
	1934–1937	41.0	0.23	50
	1937–1946	18.0	−0.05	32
Directors	1927–1932	25.0	0.10	24
	1932–1934	51.6	0.33	31
	1934–1937	57.1	0.01	14
	1937–1946	33.3	−0.70	12

1 = % of persons in first period that also appear in rank order next period.
2 = Spearman/Pearson coefficient of rank order correlation for persons that appear in both periods (1/-1 is perfect correlation).
3 = number of rank positions over which the comparison has been made.
Source: boxes Bernstein Questionnaire, Sidney L. Bernstein Collection, British Film Institute, London.

respondents liked the most famous star, only 3.8 per cent saw the most popular film. This confirms the theory that companies needed stars as brands because it was difficult to brand the films themselves. The correlation between stars' and films' popularity, analysed for the top fifteen stars, was rather low, for both males and females (see table 8.10).[113]

Other studies confirm this low correlation, finding at most a 0.25 correlation between star popularity and box office revenue.[114] Because a film was the result of numerous interactions among many creative inputs, establishing a correlation is an especially difficult task. In this light, the huge sums spent on stars do not seem entirely justified. But the main value of the stars may have resided not in their power to guarantee a hit, but rather in their ability to guarantee publicity. Stars were giant

[113] The coefficients of rank order correlation here yield limited information, because they compare two orders of different length. The correlation may be strengthened because all fifty films had been shown in the respondents' cinemas, and weakened because it does not include all films shown at these theatres. Several top-15 stars did not act in them. Many respondents left everything blank, and those who read the full list might be less representative.

[114] See, for example, the studies discussed in Kindem (1982); Simonoff and Sparrow (2000).

Table 8.10 *The top 15 film stars and their films' relative popularity among cinema-goers in and around London, 1932*

Actors				Actresses			
Rank	Name	Film title	Film rank	Rank	Name	Film title	Film rank
1	Colman, Ronald	*Devil to Pay*	4	1	Shearer, Norma	*Strangers May Kiss*	7
1		*Raffles*	12				
2	Brook, Clive	*East Lynne*	22	2	Bennett, Constance	*Sin takes a Holiday*	27
				2		*Born to Love*	20
3	Arliss, George			3	Dressler, Mary	*Reducing*	10
				3		*Min and Bill*	2
4	Montgomery, Robert	*Inspiration*	34	4	Chatterton, Ruth		
4		*Strangers May Kiss*	7				
5	Chevalier, Maurice			5	Gaynor, Janet	*Man Who Came Back*	31
6	Boles, John	*Resurrection*	30	6	Garbo, Greta	*Inspiration*	34
6		*One Heavenly Night*	15				
6		*King of Jazz*	17				
7	Lynn, Ralph			7	MacDonald, Jeannette	*Monte Carlo*	
8	Walls, Tom	*Plunder*	9	8	Crawford, Joan	*Dance Fools Dance*	35
9	Powell, William			9	Harding, Ann	*East Lynne*	22
10	Beery, Wallace	*Min and Bill*	2	10	Dietrich, Marlene	*Blue Angel*	39
11	Bancroft, George			11	Carroll, Madeleine		
12	Holt, Jack	*Last Parade*	38	12	Francis, Kay	*Raffles*	12
13	Stone, Lewis	*Inspiration*	34	13	Colbert, Claudette		
14	Cooper, Gary			14	Davies, Marion		
15	Farrell, Charles	*Man Who Came Back*	31	15	Brent, Evelyn		
Coefficient of rank order correlation			0.47	Coefficient of rank order correlation			0.39

Source: Bernstein Questionnaire 1932; boxes Bernstein Questionnaire, Sidney L. Bernstein Collection, British Film Institute, London.

promotion machines, which in a short time could create a high brand-awareness for a new film. As the surveys used here suggest, it was possible to gauge this brand-awareness and to express it in numbers.

Brand-awareness was a necessary, but not sufficient, condition for a film to reach high box-office revenues. Even if a film failed, the star as brand had done his or her work by attracting people to the cinema in the first week. Whether a film would be a subsequent success or failure would likely depend more on its inherent quality – about which word-of-mouth and reviews transmitted information. As industry observer Howard Lewis noted in 1933, 'Granting that the star system is costly, its advocates believe that, in comparison with additional expenditures necessary to add colour to a picture without a star, such costs are relatively small. This is especially true, they aver, of expenditures for advertising and exploitation.'[115] Although stars did not guarantee hits, they fully guaranteed publicity.

Stories

Just as with stars, film companies could use literary properties for two reasons: quality and fame. One can expect the price of a work to depend on four variables: inherently, on its quality and the ease of adaptation; relative to popular appeal, on its popularity (brand-awareness of the title) and its proven success.[116] Plays have all four characteristics, novels three (adaptation is less easy), short stories, articles, and other literary properties two (inherent quality and proven success), and screenplays only one (ease of adaptation).[117] Therefore, one would expect the prices of rights to plays to be higher than those of novels, and prices of novels to be higher than those of original screenplays.

The US film budgets in table 8.1, fourteen of which use a literary work, show that the prices for rights varied tremendously, and the few French budgets available suggest the same. Each year the Hollywood studios bought a wide variety of properties: besides plays and screenplays, they purchased short stories, comedies, radio programmes, newspaper

[115] Lewis (1933: 119).

[116] The general price level depended on relative costs of original screenplays (a close substitute), studios' competitive pre-emptive buying, and market size.

[117] The difference between popularity and proven success is that a story that has proved successful might not have a specific brand-awareness among consumers. For example, one can prove that a particular newspaper article has been successful, with increasing circulation, readers' letters and other reactions, but this does not mean that a specific title has brand-awareness among consumers and immediately recalls the story.

Table 8.11 *Source material of approved feature-length pictures, US, 1935–1945*

Year	Scr.play	Plays	Novels	Stories	Miscell.	Biogr.	Unknwn	Number
1935	47.0	7.9	27.4	7.1	4.6	0.6	5.4	519
1936	67.8	6.9	16.8	7.1	0.9	0.4	0.0	547
1937	64.3	6.4	16.8	7.6	1.2	2.0	1.8	608
1938	58.0	5.5	25.7	9.9	0.6	0.4	0.0	545
1939	56.3	5.8	21.7	10.1	1.4	2.9	1.7	584
1940	61.8	9.8	20.8	4.0	2.1	1.5	0.0	523
1941	63.0	10.0	10.2	14.4	0.7	0.7	0.9	568
1942	73.4	5.7	10.4	5.3	2.4	1.3	1.5	546
1943	74.8	5.5	10.1	1.4	3.8	0.5	3.8	417
1944	72.6	6.3	10.9	2.3	5.4	0.5	2.0	442
1945	64.5	6.7	15.2	2.6	10.5	0.0	0.5	389
Total	63.6	7.0	17.2	6.9	2.7	1.0	1.6	5,688

Note: all values are percentages, except the column labelled Number.
Scr.play = screenplay.
Miscell. = miscellaneous, including comics, radio programs, poems.
Biogr. = biography.
Unknwn = Unknown.
Number = number of source materials.
Source: Motion Picture Association of America, Inc., Annual Report 1946.

articles and poems. The great majority were screenplays, and the literary works contained substantially more novels than plays (table 8.11).[118]

Nevertheless, the data for 1940 displayed in table 8.12 show that the largest sums were spent on plays, followed by novels. The difference in prices is striking: plays commanded ten times more than original screenplays and twice as much as novels. This premium indicates the use of literary properties as brands. Even short stories commanded three times as much as original screenplays. Although the average prices for all literary works together fluctuated widely between 1937 and 1940 – from $14,391 to $11,921, to $9,686, to $18,229 – the sales of rights to Broadway plays show a steady increase, from $500,000 in the 1924–25 season to $1.1 million in 1931–32, to a high of $3 million in 1944–45.[119]

[118] Of the 5,688 literary properties bought by the Hollywood studios between 1935 and 1945, 64% concerned original screenplays, 17% novels, 7% plays, and 7% short stories (Motion Picture Association of America, Inc., *Annual Report*, 1946: 26).

[119] Bächlin (1945: 175–6). A study of Warner Brothers is consistent with the above hierarchy of importance and the industry figures. Between 1934 and 1941, the firm paid on average about $27,800 for a play, $15,400 for a novel, $9,200 for a short story and $5,000 for an original screenplay (Gustafson 1983: 77). Between 1937 and 1940 a

Table 8.12 *Prices paid for different kinds of literary properties by US film studios, 1940*

Type of property	Number	Share (%)	Value ($)	Share (%$)	Av. price$
Stage plays	51	9.9	1,650,000	36.7	32,353
Novels	109	21.2	1,575,000	35.0	14,450
Original screen stories	323	62.7	1,000,000	22.2	3,096
Short stories	21	4.1	225,000	5.0	10,714
Miscellaneous	11	2.1	50,000	1.1	4,545
Total	515	100.0	4,500,000	100.0	8,738
Total (excl. original scr)	192	37.3	3,500,000	77.8	18,229

Source: Bachlin (1945: 175–76).

The story departments of Hollywood studios bore some resemblance to the research and development centres of pharmaceutical companies. Paramount, for example, had story departments in both Hollywood and New York. The latter, close to the literary world, selected stories based on the studio's current story requirements, the states' censorship laws, and plots best suited to each Paramount player or director. Once a week, departments sent summaries of all reviewed material to the studio heads. If they were interested, an 'adaptor' quickly prepared a rough script. If that was approved, the studio head would assess the value of the story, set a price limit, and instruct the legal department to handle the purchase. The purchased story went into immediate production or to the studio's substantial catalogue for future use.[120]

Before 1940, Hollywood market research on stories was quite cursory. Universal asked in its 1928 survey whether respondents liked happy endings, and if Universal should retain unhappy endings when it turned books or plays into films. Most respondents favoured happy endings, if not 'forced', and wanted to keep original unhappy endings, although some would allow change if it 'did not detract from the story'.[121]

In the 1940s, film studios undertook more elaborate market research. For example, market researchers asked librarians in small towns about

boycott of Broadway by Hollywood, against restrictions on their investments, affected all the majors except Columbia (McLaughlin 1974: 282–4). All amounts mentioned are in 1927 dollars.

[120] Lewis (1930: 181–5). Gustafson (1983: 172–235) shows that Warner's story department in the 1930s and 1940s worked along the same lines. Twentieth Century Fox even had an internal printed catalogue of all the hundreds of stories to which it held rights, for circulation among its executives and creative personnel. Studios traded and exchanged these rights.

[121] Lewis (1930: 132–7).

the most popular children's books. Apart from *Pinocchio*, *The Wizard of Oz* and *Gulliver's Travels*, *Sue Barton Rural Nurse* turned out to be the favourite. It had never been filmed before, and the market researchers thus advised the acquisition of the rights to the Sue Barton novels.[122]

Film studios often bought stories because they thought them suitable for a particular star. A well-chosen combination of star and story brands could reinforce each other, just as 'miscasting' a star could damage film revenues. RKO, for example, questioned consumers on potential vehicles for Orson Welles. Did they prefer to see him in *Invasion from Mars*, *Heart of Darkness*, *Smiler with a Knife*, or *Cyrano de Bergerac*? Most chose *Invasion from Mars*, as they considered Welles a heroic personality. In the late 1930s and 1940s, the studios also habitually commissioned 'title tests' for new projects.[123] Studios realised that besides the fame of a work, the title itself was important. As it was the first or second thing people knew about a movie it could be instrumental in informing and persuading the consumer.

For Britain, systematic data on prices paid for literary properties are minimal. During the 1930s, literary works rather than original screenplays were the basis for about half of all British films. Plays were the most popular genre, with more films based on plays than on novels and short stories combined (see table 8.13). For France, data are also sparse. Between 1936 and 1939, over half of French films were adapted from a literary property, slightly more than in Britain, and French film producers used novels slightly more than plays (table 8.13). It is probable that both British and French film companies made more use of literary works than their American counterparts, possibly because of their countries' grand literary traditions, and because of the small scale of the industry, which probably could sustain few specialised screenwriters or story departments.

Few sources exist on consumers' preferences for stories, though Kuhn's findings for Britain support their importance. Most respondents (73%) favoured 'Films of books and plays', followed by 'Music and dance films' (43%), 'Epics, historical and adventure films' (36%), 'War films' (28%), 'Comedy' (18%), and 'Suspense and horror films' (18%).[124] The high

[122] Not to be confused with *Sue Barton Student Nurse*, *Sue Barton Senior Nurse* and *Sue Barton Visiting Nurse*. The series, written by Helen Dore Boylston, had seven titles. ARI, 'Report XXI: Sue Barton' (19 Aug. 1940).

[123] See, for example, ARI, 'Report XII: *Smiler with a Knife*, *Heart of Darkness* or *Invasion from Mars*' (15 May 1940); ARI, 'Report XIV: *Cyrano de Bergerac*' (18 May 1940); ARI, 'Report XVII: Titles for man hunt story' (11 July 1940); ARI, *Increasing profits with continuous audience research* (Princeton, Audience Research Institute, 1942), 105–10.

[124] Kuhn (1999: 538).

Table 8.13 *Sources of film scripts, Britain and France, 1929–1939*

Year	Scr.play	Plays	Novels	Radio	Others	No. films
Britain						
1929	32.0	29.1	29.1		9.0	86
1930	38.0	38.4	12.1		11.0	99
1931	35.0	47.8	11.2		6.0	134
1932	45.0	35.3	16.7	0.7	2.3	150
1933	54.0	29.3	14.4		2.0	181
1934	45.0	36.1	14.8	0.5	3.5	183
1935	45.0	27.0	24.9	2.2	0.8	185
1936	50.0	24.7	19.2	0.5	5.5	219
1937	55.0	16.6	20.4	1.4	5.6	211
1938	53.0	19.0	18.4	1.3	7.7	158
1939	42.0	18.4	34.7	4.1	0.9	98
Average	44.9	29.2	19.6	1.5	4.9	155
France						
1936	47.0	22.0	26.0		5.0	
1937	38.0	21.0	34.0		7.0	
1938	49.0	18.0	27.0		6.0	
1939	54.0	18.0	24.0		4.0	
Average	47.0	19.8	27.8		5.5	

Novels = Novels or stories.
Radio = Radio productions.
Note: figures are percentages of all film releases, except for the last column.
No. films = total number of British films released.
Sources: Shafer (1983: 4–5); Wood (1986: 122); Crisp (1993: 290).

prices paid for stories suggest that the distribution of fame among the most popular titles will be similarly disproportionate to that for stars. A 1941 ARI open question poll about the respondents' most popular comic strip yielded a Gini-coefficient of 0.61, well within the range of that for players' fame.[125]

A 1940 ARI study in New York City suggests that, like stars, stories were poor predictors of a film's success, but were instead giant publicity machines, used to reach a high brand-awareness in a short time before and during a film's release. The researchers constructed a 'penetration index' and 'intensive penetration index' based on the percentage of people who 'had heard' or 'had heard a great deal' about a film. Ten

[125] The disproportionate fame distribution may also explain first-mover advantages in advertising-intensive industries, where historically established market shares are hard to reverse (Sutton 1991).

pictures with a well-known title started their local promotion campaign with 19.5 points of penetration obtained at a cost of $27 per point, and an intensive penetration of 6.5 obtained at a cost of $119 per point. Sixty-five pictures with unknown titles started with ten points and three points, respectively, obtained at $137 and $540 per point.[126] Clearly, it was much more difficult and expensive to create popular awareness of a new title than to work with one already known to moviegoers in another context.

Conclusion

This chapter has taken a microeconomic look at the escalation phase and at the costs sunk in film production. Its findings confirm that the increase in outlays on film production indeed involved costs which were endogenous and sunk. It also reveals that a substantial part of these costs concerned the payment of creative inputs that had a function similar to that of brand names. Most of the *increase* in sunk costs was to the payment on these creative inputs, such as star actors, actresses, directors, and famous stories.

The huge sums paid by the film industry for these stars and stories, then, were not as irrational and arbitrary as they sometimes might have seemed. They might have been just as rational and have had just as quantifiable a return as direct spending on marketing and promotion. Between 1900 and 1940, as the emerging film industry industrialised live entertainment and integrated its markets by automating the performance, standardising the product, and making the service tradeable, sunk costs and uncertainty rose. To secure an audience, film producers borrowed branding techniques from other consumer goods industries, but films' short shelf-life forced them to extend the brand beyond one product by using trademarks or stars, to buy existing 'brands' such as famous plays or novels, and to deepen the product life-cycle by licensing their brands. The growing and integrating market thus induced film producers to change film from a largely unbranded product into a heavily branded one.

The main value of stars and stories lay not in their ability to predict successes, but in their services as giant publicity machines that optimised advertising effectiveness by rapidly amassing high levels of brand-awareness before and during a film's release. After the film's release, brands and promotion could only amplify a film's success. They could

[126] ARI, 'New York City Motion Picture Market Study for RKO Radio Pictures Inc.', Princeton, N.J., 1940.

not reverse or diminish a failure, as information about its quality spread rapidly by word-of-mouth and made further promotion of a flop ineffective.

The young age at which stars reached their peak, and the disproportionate income distribution even among the superstars, confirm that payment to stars was for their ability to generate publicity rather than purely for the quality of their performances. Likewise, because 'stories' (pre-existing literary works) cost several times as much as original screenplays, their popular appeal was at least part of the reason for purchase. Stars and stories telegraphed a film's qualities to some extent, confirming that they contained at least two elements with which viewers were already familiar. Studies of consumer preferences corroborate the view that stars and stories provided the main incentives to see a film.

The finding that the popularity of stars was distributed more disproportionately than their incomes, possibly even twice as disproportionately, suggests that film companies were able to capture the rent of the stars' popularity to a considerable extent.

Gradually the film companies became adept at developing and leasing their 'instant brands' to other consumer goods' industries. In a self-reinforcing and symbiotic process, this merchandising in its turn widened and deepened the shelf-life of films. Thus, the process had gone full-circle: the motion picture, a branded *product*, had become a pure, short-lived *brand* without a product, which, when attached to a product of little value, could increase that product's perceived quality, multiplying the price and the quantity that could be sold. By making brands tradeable, the feature film opened up a new chapter in the history of other consumer products and services.

We have examined how, in an interactive process, film production strategies were shaped by consumer preferences and generally aimed to vertically differentiate films to maximise box-office revenue. In the next chapter, we turn to another factor that shaped the film production strategies, in particular the size of the over all budget: the nature of the international film market.

Part III

Entertainment Industrialised

Introduction to Part III

The preceding part investigated the take-off of the film industry, the subsequent quality race and the shift in the geographical and industrial structure of international film production. This part will examine the consequences. It will do so in three ways. First, Chapter 9 investigates how tradeability – the one-off qualitative change that cinema technology brought about – affected the international trade in entertainment and how it constrained firms' strategies. Second, Chapter 10 investigates how modern market research techniques, pioneered by film companies, institutionalised the entrepreneurial discovery process, but at the same time standardised, automated and made tradeable the knowledge that entrepreneurs obtained about the market.

Third, Chapter 11 aims to quantify the impact of productivity growth in spectator entertainment on the wider economy, using growth accounting and social savings. In addition, the chapter explores qualitatively to what extent cinema provided a model for the industrialisation of services and pioneered business and organisational practices later used elsewhere, most notably in other high-sunk-costs service industries. Finally, Chapter 12 evaluates how the developments discussed in all the preceding chapters influenced the international film industry after 1945, and where the evolution of entertainment production that started with the liberalisations of the nineteenth century has brought the Western world today.

9 International market integration: firms versus trade

The last few chapters investigated how the film industry first became concentrated industrially and then geographically. A question that remains is why most of the large film companies – both the Hollywood studios and the earlier firms they replaced – strived to do their own distribution in most major film markets; in other words, why did they move their international transactions inside a multinational firm rather than doing them through the market? The current chapter addresses this question and attempts to explain how multinational enterprises became so predominant in motion pictures compared to many other industries, and to what degree the economic product characteristics of film can explain this predominance and the specific patterns of international trade that emerged.

The international integration of markets for spectator entertainment happened in three stages.[1] In a first stage, silent film made tradeable the visual part of the performance. Sound was still provided by local inputs, such as musicians and performers who did their acts in between the short films. In a second stage, when the feature film emerged, shorts became side dishes rather than the main fare, and the second kind of performer became somewhat less common. In a third stage, talking pictures standardised, automated and made tradeable the musicians' performance and the few remaining live acts, completing the process of international market integration.

This chapter focuses on the international film trade. It is not a business history of the main film companies and it does not aim to provide a stylised history of their development, even a rudimentary one. Many histories of film companies, especially those from Hollywood, can be consulted, and several contain chapters about their international strategy and development.[2]

[1] See Chapter 2.
[2] Bordwell *et al.* (1985); Vasey (1997); Trumpbour (2001); Jarvie (1992).

The rest of this chapter is structured as follows: the next section investigates the economics of the international film trade and to what extent it can explain the observed international strategies. A subsequent section first discusses the characteristics of multinational enterprise in the film industry, and then gives an overview of specific instances. A final section looks at alternative internationalisation strategies, especially those of European firms during the interwar period.

The economics of the international film trade

Films had special characteristics that necessitated international sales.[3] Because they were essentially copyrights rather than physical products, theoretically the costs of additional sales were zero. Film production involved high endogenous sunk costs, recouped through renting the copyright to the film. The marginal foreign sales equalled marginal revenue and – after production costs had been fully amortised – marginal net profits. From the mid-1910s, as production outlays on feature films increased rapidly, international sales became essential. Even the Hollywood studios, located in the world's largest entertainment market and having the largest capacity to amortise production costs, needed foreign sales to make a profit. Every film company had to sell in foreign markets, even smaller ones. This divided the industry into a few large integrated 'mass-producers' of films, and a wide fringe of specialty producers, many of which used international networks to amortise their production costs worldwide. All companies, large or small, had to take into account foreign sales when setting film budgets. In the film industry, prices drove costs and not the other way around. Yet, the degree of dependence and importance of particular foreign markets varied across nations and companies.[4]

Films were intermediate products sold to foreign distributors and cinemas. While the rent paid varied depending on perceived quality and general conditions of supply and demand, the ticket price paid by consumers generally did not vary. It only varied by cinema: it was highest in first-run city centre cinemas and lowest in sixth-run ramshackle neighbourhood cinemas.[5] Cinemas used films to produce

[3] This section is partially based on Bakker (2004b).
[4] The existing literature mainly focuses on the present day, and on trade in American entertainment to television stations. See, for example, Wildman and Siwek (1988); Noam and Millonzi (1993); Hoskins, McFadyen and Finn (1997).
[5] Sedgwick (1998).

'spectator-hours': a 500-seat cinema providing one hour of film, produced 500 spectator-hours of entertainment. If it sold 300 tickets, the other 200 spectator-hours produced were lost.

Because film was an intermediate product and a capital good at that, international competition could not be on price alone, just like sales of machines depend on the price/performance ratio. If we consider a film's 'capacity to sell spectator-hours' (hereafter called selling capacity) as proportional to production costs, a low-budget producer could not simply push down a film's rental price in line with its quality in order to make a sale; even at a price of zero, some low-budget films could not be sold. The reasons were twofold. First, because cinemas had mostly fixed costs and few variable costs, a film's selling capacity needed to be at least as large as the cinema costs plus its rental price. A 700-seat cinema, with a production capacity of 39,200 spectator-hours a week, weekly fixed costs of $500, and an average admission price of $0.05 per spectator-hour, needed a film selling at least 10,000 spectator-hours, and would not be prepared to pay for that (marginal) film, because it would only recoup fixed costs. Cinemas could only price down low-budget films to just above the threshold level. With a lower expected selling capacity, these films could not be sold at any price.[6]

This reasoning assumes that we know a film's selling capacity *ex ante*. A main feature distinguishing foreign markets from domestic ones was that uncertainty was markedly lower: from a film's domestic launch the audience appeal was known, and each subsequent country added additional information. While a film's audience appeal across countries was not perfectly correlated, uncertainty was reduced. For various companies, correlations between foreign and domestic revenues for entire film portfolios fluctuated between 0.60 and 0.95 (see table 9.1). Given the riskiness of film production, this reduction in uncertainty undoubtedly was important.

The second reason for limited price competition was the opportunity cost, given cinemas' production capacities. If the hypothetical cinema obtained a high-capacity film for a weekly rental of $1,200, which sold all 39,200 spectator-hours, the cinema made a profit of $260 ($0.05 × 39,200 = $1,960 − $1,200 − $500 = $260). If a film with half the budget and, we assume, half the selling capacity, rented for half the price, the cinema-owner would lose $120 ($0.05 × 19,600 = $980 − $600 − $500 = − $120). Thus, the cinema-owner would want to pay no

[6] This is not dissimilar to the quality thresholds, capabilities and minimum quality/cost ratios discussed in Sutton (2001, 2005). See also Chapter 7.

Table 9.1 *Costs and revenues for Albatros, juxtaposed against several Hollywood studios, in current dollars*

	Albatros		Hollywood		1924–1929			1929 only
		cv	Average	cv	MGM	Warner	Fox	RKO
Average production costs ($)	29,000	0.53	229,000		281,000	189,000	178,000	218,000
Average rentals ($)	54,000		570,000		731,000	518,000	362,000	461,000
Domestic	16,000	0.63	416,000		486,000	386,000		375,000
Foreign	38,000	0.79	154,000		245,000	132,000		86,000
Correlation domestic/foreign revenue	0.62							
Domestic revenue/costs (%)	55		181		173	204		172
Domestic revenue/total revenue (%)	30	0.45	73		66	75		81
Outlays creative inputs ($)	9,000	0.67	99,000					
Outlays creative inputs (% cost)	31	0.20	43	0.30				
Total number of films	25		269		259	253	294	30
Total costs ($1,000)	721		57,642		72,875	47,807	52,245	6,526
Total revenue ($1,000)	1,348		142,271		189,431	130,988	106,394	13,832
Return on investment	41.8		28.7		33.8	38.6	13.7	16.8

Notes: All money figures rounded to the nearest $1,000. Albatros net rentals, Hollywood gross rentals. For the ROI comparison, Hollywood net rentals have been conservatively estimated at 2/3 of gross rentals.
It is assumed entire production costs had to be borrowed for 18 months at 8 per cent.
Returns are annualised net returns on investment, as fraction of invested capital. Albatros: ROI calculated using real francs rather than dollars.
Hollywood average is average of MGM, Warner and RKO only, except for total costs, revenues and ROI, which include Fox.
cv = coefficient of variation (standard deviation/average).
Albatros: selected films 1924–29.
MGM, Warner and Fox: all films, 1924–29.
Sources: Film Files, Archives Albatros; Hollywood studios: Glancy (1992, 1995); Jewell (1994); Koszarski (1990).

more than $220 for the lower budget film, given that the high budget film is available ($0.05 × 19,600 = $980 – $220 – $500 = $260).[7]

The increasing returns to selling capacity made the setting of production outlays important, as a right price/capacity ratio was crucial to win foreign markets. For smaller, especially European, production companies this meant they had to keep their budgets low and to differentiate their product from the high-selling-capacity Hollywood films, because this could generate additional sales without incurring additional costs. They also had to take into account that in some foreign markets they could rent their films only to last-run cinemas, because the film's selling capacity was too low to cover the fixed costs of the earlier-run cinemas.

A company could sell films internationally in two different ways. It could handle transactions through a foreign distributor, or it could set up its own distribution company. If it did the former (as was done by most small film companies and in most small countries), it could sell the film rights outright or for a percentage of the distributor's revenue, thus sharing in distributors' profits, though not in their losses. In an intermediary construction, the foreign distributor gave a 'minimum guarantee': a sum paid up-front and a percentage paid as soon as the producer's share exceeded this guarantee. The minimum guarantee was (and is) commonplace for domestic distribution arrangements. Because of transaction and monitoring costs, film companies sold films outright to smaller markets, while using percentage contracts for larger ones.[8] To reduce transaction costs, smaller companies often used specialised agents for small foreign markets. Often given exclusive territories, these agents usually received a 10 per cent commission. Sometimes multiple, competing agents were used and the best offer accepted.[9]

Proprietary distribution networks in other countries guaranteed access to screen-time, and ensured the producer would capture most of the rents to the copyright. The fact that the producer's and distributor's incentives also were fully aligned led to optimal exploitation of the copyright and enabled the producer to capture fully the increased marginal revenues caused by increased production costs.[10] Small producers could not afford to set up their own foreign distribution and thus relied on other sales methods. These factors affected the business strategy of smaller European companies in four ways.

[7] The relation between production costs and selling capacity is assumed to be linear. Moderate decreasing returns would yield the same effect, as would increasing returns. Probably on average, increasing returns were followed by constant returns, and finally by decreasing returns to the last dollars spent on already high-budget films.

[8] See also Caves (2000). [9] Thompson (1985: 100–47). [10] Bakker (2003b: 29–35).

First of all, their level of outlays on film production needed to be disproportionately smaller than those of the Hollywood studios in order to break even. If, for example, the revenue-generating capacity of a film was half that of a Hollywood film, costs needed to be far less than half, assuming that the film's capacity was still above threshold level. Second, smaller firms could not pay their creative inputs as much, and their cost appears to have been a lower share of the film production budget than in Hollywood.[11] One way in which European companies achieved this was by offering creative inputs shares in profits rather than large fees. This shifted part of the risk to others and helped firms achieve a disproportionately lower production cost vis-à-vis Hollywood. Third, smaller European companies tried to make contractual alliances with their counterparts in other countries to facilitate financing and distribution in other countries. Fourth, the smaller European companies generally marketed their films abroad in a different way. They often sold rights for specific countries outright, and their films were often disproportionately successful in countries that were culturally and linguistically close. Les Films Albatros, for example, a small French film company for which exceptionally detailed foreign sales data have survived, found it easy to export its films to Latin European and Latin American countries, but found its films unsellable in some other territories.[12]

Just how different the international sales pattern of European films could be from that of Hollywood films becomes clear from Albatros' sales figures (figure 9.1 and table 9.2). Albatros sold its films in many different markets, with the French and Latin zones counting for almost 60 per cent of all revenues. For Hollywood, the English-speaking countries accounted for as much as 80 per cent of revenues, and the Latin zones combined for just 10 per cent.[13]

The exceptionally detailed sales data of Albatros enable a comparison with the Hollywood studios which gives some tentative insights into the position smaller European film companies could find themselves in. First of all, it is clear that the scale of Albatros' operations was about an order of magnitude lower than that of the Hollywood studios. Hollywood cost and revenue data for 1914–39 show that, although revenues per film could differ enormously on a portfolio basis, quite a consistent relationship between costs and revenues existed in the long run ($R^2 = 0.92$), with slightly decreasing returns setting in (see figure 9.2). This shows how film portfolios could spread risk for film companies.

[11] Bakker (2004b). [12] *Ibid.*
[13] On market size and 'cultural discounts' see also Wildmand and Siwek (1988).

Table 9.2 *Relative importance of country groups in Albatros film revenues, 1924–1931, and US film revenues*

Year	1924	1924	1925	1926	1926	1928	1928	1931	1931	Average	Average	Coefficient	1925	1934
Film	A	B	C	D	E	F	G	H	I	all	silent	of variation	US	US
Revenue per zone (% of total revenue)														
France	24	21	11	18	9	18	16	58	64	27	17	0.71	1	5
French zone	34	31	19	26	15	24	24	69	94	37	25	0.66	2	6
Latin Europe	9	20	11	20	7	12	15	8	4	12	13	0.46	1	5
English zone	10	0	32	19	39	15	5	0	0	13	17	1.02	82	78
Western Europe	11	19	15	14	15	14	2	1	0	10	13	0.66	5	5
Eastern Europe	22	14	9	6	8	10	17	8	2	11	12	0.55	1	2
Scandinavia	5	0	6	3	4	5	9	3	0	4	4	0.69	2	0
Latin America	6	5	7	7	5	15	19	7	0	8	9	0.66	4	2
Asia/Middle East	4	11	3	4	7	6	9	2	0	5	6	0.64	2	2
Territories for which the film was sold (% of all territories in zone)													territories/zone	
France	100	100	100	100	100	100	100	100	100	100	100	0.00		
French zone	100	100	100	100	100	100	100	100	100	100	100	0.00	4	
Latin Europe	100	100	100	100	100	100	100	100	100	100	100	0.00	4	
English zone	17	0	50	67	67	67	50	0	0	35	45	0.82	6	
Western Europe	67	67	67	100	100	67	33	33	0	59	71	0.52	3	
Eastern Europe	73	36	64	55	64	55	82	64	18	57	61	0.32	11	
Scandinavia	100	0	100	100	100	100	100	100	0	78	86	0.53	4	
Latin America	75	42	83	100	92	100	83	67	0	71	82	0.43	12	
Asia/Middle East	57	43	71	71	71	57	57	14	0	49	61	0.50	7	

Notes: Numbers show percentage of films' total net revenue from respective zones. US = Total revenue shares for American films, on average.
French zone: France, Belgium, Switzerland, Luxembourg and colonies. Latin Europe: Spain, Portugal, Italy, Romania.
English zone: Britain and colonies/dominions, US, Ireland. Western Europe: Germany, Netherlands, Austria.
A = *L'Heureuse Morte; B = Feu Mathias Pascal*; C = *Paris en Cinq Jours*; D = *Carmen*; E = *Jim la Houette, Roi des Voleurs*; F = *Les Nouveaux Messieurs*; G = *Les Deux Timides*; H = *Le Monsieur de Minuit (sound)*; I = *Un Coup de Téléphone (sound)*.
Source: Seabury 1926; American trade press; Film Files, Archives Albatros.

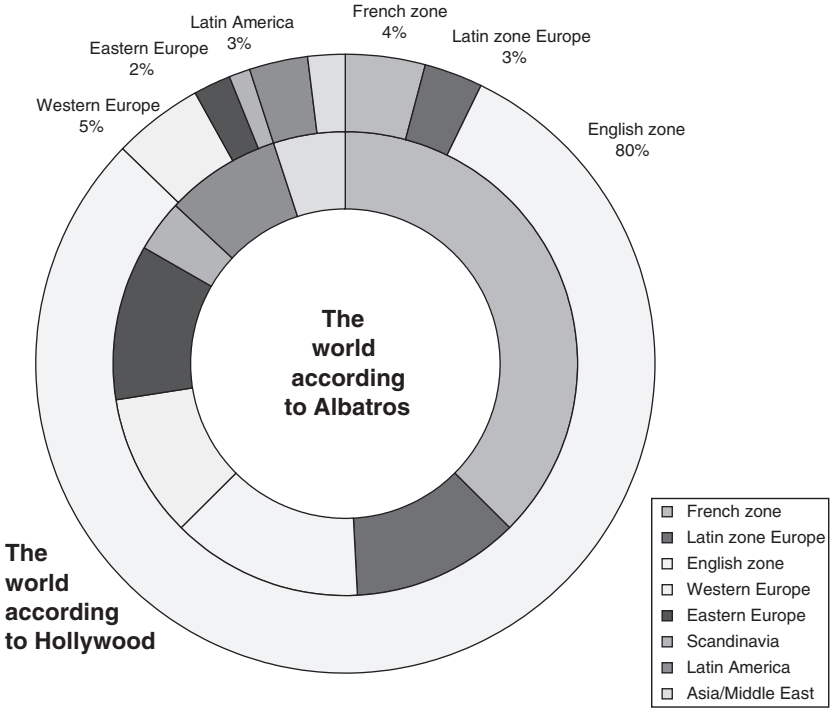

Figure 9.1 The world according to Albatros vs. the world according to Hollywood, late 1920s/early 1930s
Source: Bakker (2004b).

Portfolio data for Albatros, estimated from its surviving financial data, show that its costs and revenues roughly fit the regression line and that it certainly was in a different class from the Hollywood studios, with much lower revenues.[14]

Nevertheless, Albatros did exceptionally well. The average (annualised) return on investment per film, including the cost of capital, was 51%, and the return on the total investment in its films was still an impressive 42%. This makes it understandable that cinema was France's third-fastest growing industry in the interwar period. Comparatively, between 1924 and 1929, the Fox Film Corporation only reached a return of 13.7%, market leader Metro-Goldwyn-Mayer, 33.8%, and the

[14] Sedgwick and Pokorny (1998) argue that production costs are most meaningful when considered in portfolios.

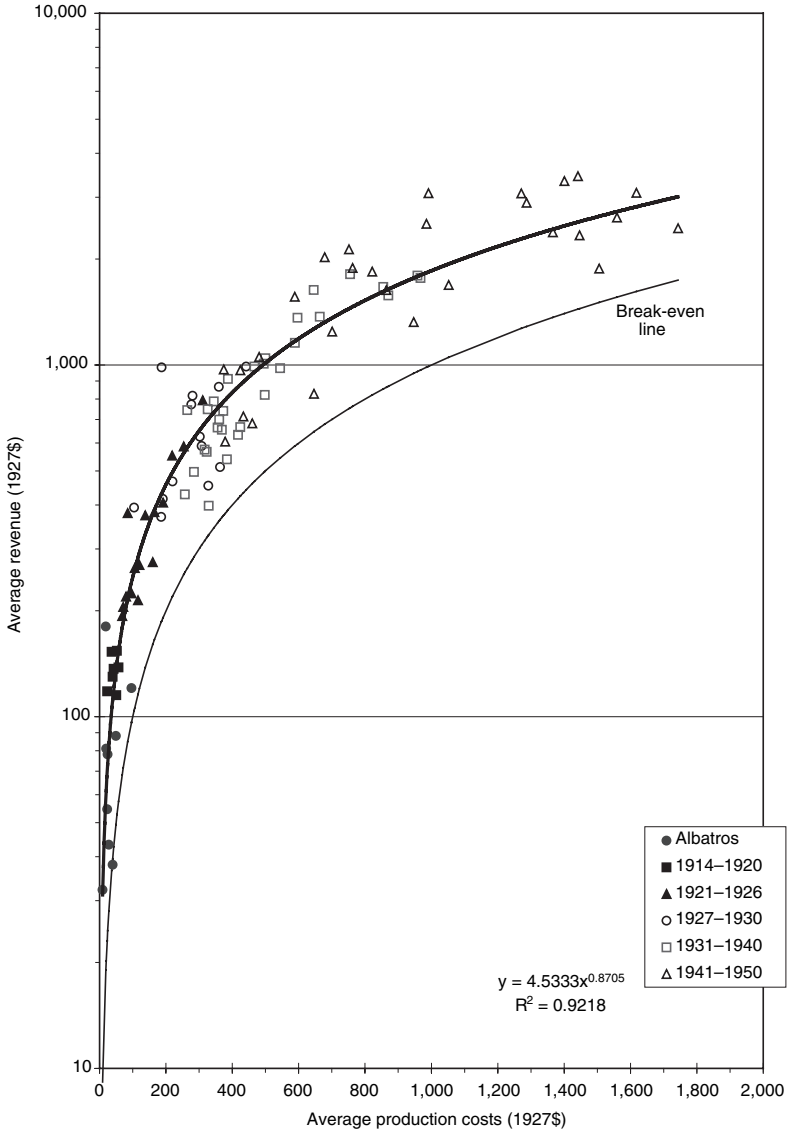

Figure 9.2 Average annual production costs and average annual revenues for Albatros, Fox Film Corporation, Warner Bros., MGM and RKO, in constant 1927 dollars, 1914–1940

Note: Albatros' costs and revenues were deflated to 1927 francs, and then converted into 1927 dollars using the exchange rate.

The bold line is the regression line, the thin line is where average costs per film equal average revenues.

Sources: Glancy (1992, 1995); Koszarski (1990); Jewell (1994).

fast-growing, innovative Warner Brothers (which introduced sound film), 38.6% (table 9.1).[15]

The high gross return of Albatros fits with the observation that small and medium-sized companies reach a higher return on investment than large companies. One reason put forward is their high cost of acquiring capital, which forces them to invest in projects with a higher expected return. Also, stock markets and banks demand higher returns from small companies, even if corrected for higher earnings variability. On the US stock market, small companies performed about 80 per cent better than large companies.[16]

Multinational enterprise in the film industry

Ways of trading films internationally could happen in various successive stages, each bringing more of the transaction within the firm and less inside the market. First of all, films could be sold outright to foreign companies from the home country. Second, initially, especially before the 1920s, film companies had foreign sales offices that simply tried to sell or place films with foreign distributors. A third stage, which became especially popular in interwar Europe, was constituted by the long-term mutual contracts with foreign producers–distributors to guarantee foreign distribution of each others' films.[17] A fourth phase was setting up foreign distribution networks. This is the stage that the French companies reached during the 1900s and the Hollywood studios during the 1920s. A fifth stage would be local film production and local exhibition. The French multinationals achieved the fifth phase in the 1900s, the Hollywood studios never did it in a permanent, systematic way.[18] Acquisition of foreign cinema chains has taken place since the 1900s. The Danish Nordisk company owned substantial chains in Germany, Switzerland and Austria, French companies owned some foreign cinemas, and Hollywood studios acquired substantial interests in British chains during the interwar period.

Rights-based multinationals

To some extent, the structure of multinational enterprises in the film industry can be characterised as that of a rights-based multinational, a

[15] A high return needs to be compared to the absolute amount of cash generated.
[16] For 1925–95, the average annual return with reinvestment was 7% for large and 12.5% for small companies (Brigham and Houston 1998: 155, 375). This underlines the importance of more business-historical research and theory, like Scranton's (1998) and others' on smaller firms.
[17] See the discussion of the Film Europe movement, below.
[18] With the exception of some interwar years and project-by-project offshore production.

model developed by Bakker (2006) to understand the internationalisation of the music industry. Rights-based multinationals have three main common characteristics: high endogenous sunk costs, maximum economies of scale and scope in R&D and minimum economies of scale and scope in distribution. These will be discussed in turn.

Because of the high sunk costs marginal costs were low, and marginal revenues therefore largely equalled marginal profits. Since rights-based products were often given a legal monopoly by intellectual property law, this resulted in monopoly pricing with almost zero marginal costs that hardly increased with output at all. Rights-based multinationals therefore were investing in projects with uncertain outcomes, the products of which would be monopoly-priced ex-post, if they became successful. The rights-based monopolist therefore often invested in an entire portfolio of projects, each with a certain, not entirely correlated, likelihood of success. This had the implication that prices drove sunk outlays. The prospective market size, from which the monopoly price could be estimated, was the most important factor, as marginal costs were near zero and largely known in advance. Prices therefore drive costs in rights-based industries, and not the other way around. At various points during the life-cycle of a project, decisions had to be made anew whether to stop or continue, and for these decisions, past costs incurred were ignored. Only the prospective price and subsequent expected sunk outlays were taken into account.

Return on investment was less useful as a performance indicator of individual projects for firms in high-sunk-costs industries, because the amount of past sunk costs were irrelevant, sunk costs were generally not capitalised in accounts, and risk and uncertainty was distributed across projects and portfolios.[19] In rights-based multinationals expected gross profit margins[20] (and market size) were more useful as a decision-making tool than return on investment, as the former stayed independent of the amount of sunk costs incurred.

The property that marginal revenues largely equalled marginal gross profits had three important implications for the degree of multinationalisation of rights-based firms and for their organisational structure. First, it encouraged the vertical integration of R&D with production and distribution, as firms wanted to make sure that they could claim the

[19] Sunk costs such as R&D are generally not considered an investment but written off in the year they are incurred.

[20] I.e. the profit margin before taking into account sunk costs incurred in the past. Because they are written off immediately, they do not have to be considered when the final product is marketed.

marginal revenues generated by their sunk outlays, rather than an outside distributor, and that they had guaranteed distribution access. Second, this property caused the world-wide exploitation of the results of sunk costs, even in very small markets.[21] However tiny the revenue, selling in those markets might still have been profitable since marginal costs were extremely low. Third, the property resulted in the emergence and evolution of a transacting framework and incentive structure that translated the finished product's marginal revenues into marginal profits at various stages in the product chain. Examples of this were percentage-based contracts, and the part-ownership of R&D units by their managers.

A second common characteristic were the maximum economies of scale and scope in R&D. Rights-based industries generally experienced decreasing returns to the number of persons working on one project and the number of projects in one location. In the pharmaceutical industry, for example, a limit existed to the number of scientists working on a particular disease and the number of disease groups in a particular laboratory.[22] A rights-based multinational often had a multitude of R&D units that were idiosyncratically dispersed and often tapped into local knowledge networks. They were sometimes partially externally owned, to provide incentives for their managers and shift some risk away from the multinational to outside parties. The organisational structure had a form not dissimilar to that of a federation and can therefore be called the federated form, or F-form. The F-form allowed a rights-based multinational to launch new product innovations constantly, and organise these in a portfolio to diversify risk.

A third common characteristic was the minimum scale and scope in distribution. Rights-based firms needed to distribute in all major markets in the world, as marginal revenues were marginal profits. They also needed to own or strongly contract local distribution in those markets to guarantee market access and to enable them to capture the rents of their rights. The distribution network was often highly asset-specific and also collected important knowledge about the market, which helped multinationals with new product development (as potential market size drove costs), with the valuation and buying of other firms, and with the effective international marketing of their products (knowing which products sell to which segment and through which channel at which price).

[21] This does not hold for advertising, which is mainly effective nationally, but these are not the main sunk costs of rights-based multinationals and generally are used to support the marketing of products developed with sunk costs.

[22] Cockburn and Henderson (1999: 320–4).

Multinationals in the early film industry

A few multinationals existed from early on in the film industry. One of the first was the British Mutoscope and Biograph company, that exploited coin-in-the slot motion picture machines from the late 1890s onwards. Its main assets were the licences and technology of the American Mutoscope and Biograph company.[23] Another early multinational entrepreneur was Georges Méliès, who already in 1902 had set up an American subsidiary to market his films. Some years later his brother Gaston would found a US production company, but he eventually severed the ties with Georges.[24] These early multinationals were slightly ad hoc, and had subsidiaries in just a few countries.

During the 1900s, the French film industry brought forth the first large-scale multinational enterprises, which eventually came to have distribution subsidiaries in most major markets, and production subsidiaries in some. Pathé Frères, incorporated in 1897, started from a technological base producing film cameras, projectors and raw film stock, and initially made films to drive up demand for its equipment. It made massive investments, at times doubling and trebling capacity, and consistently undercutting prices of other firms such as Edison. It was backed by a group of French industrial families and public offerings on the Paris stock market. At a rapid pace, it set up distribution offices in nearly all European countries and on every continent, to which it supplied every day a steady stream of new films, from studios in Paris, Moscow and New Jersey, among others. The result was an international network of distribution and production subsidiaries, the most important of which was its US subsidiary. According to contemporary estimates Pathé held 80 per cent of the European film market and half of the world film market during the 1900s. It was the largest supplier in the US market. 'I did not invent cinema, but I industrialised it', was the motto of Charles Pathé.[25]

Its French competitor Gaumont, founded in 1896, followed a similar strategy, but was smaller (with roughly between a sixth and a third the turnover of Pathé), slightly later, did not make raw film stock, and did not match Pathé's aggressive, risky capacity expansions. As early as 1898 Gaumont set up a British subsidiary, followed by a British film studio. From 1904 onwards (and possibly earlier), Gaumont exported films to the United States through the American Biograph & Mutoscope Co.[26] In 1907, Gaumont had foreign subsidiaries in Barcelona, Berlin, London and

[23] Brown and Anthony (1999). [24] Malthete (1993); Thompson (1996).
[25] Pathé (1940). [26] Spehr (1985: 108).

Moscow.[27] In 1908, new agencies were created in Brussels, Milan and Vienna, while the agencies in Berlin and London were expanded.[28] In 1908, four years after Pathé had established its US branch, Gaumont founded an American subsidiary, which included a small film studio and a film development lab and printing 'factory' in Flushing, Long Island.[29] In the same year, Gaumont made the London subsidiary into a separate company, Gaumont Ltd, which later became Gaumont-British.

The third-largest French multinational, Éclair, can be characterised as a fast follower. It was created in 1907 when a group of venture capitalists bought the small film camera and projector maker Parnaland, renamed it Éclair, floated it on the Paris stock market and massively increased its capital.[30] This fitted well in the investment boom in the French film industry that started from 1906 onwards.[31] A few months after Éclair's foundation, Parnaland retired. Éclair basically mimicked the strategies of Pathé and Gaumont. When Parnaland died in 1913, Éclair was the third-largest film-producing company in France, after Pathé and Gaumont.[32] Éclair expanded rapidly internationally, although less is known about its international strategy and structure than for Pathé and Gaumont. By 1913, the firm's international operations included film-producing subsidiaries in Britain (Franco-British-Éclair), Germany (Deutsche Éclair), two separate film studios in the US as well as an Austrian subsidiary (W.A.F. films).[33] Between 1913 and 1917 Éclair's British-made Sherlock Holmes films were exported back to France, and its newsreel was released in six different editions: French, British, German, Austrian, Russian and American.[34]

Common features of the three French multinationals were that they were all listed on the Paris stock market, they all had substantial hardware manufacturing, and they all set up production units in the US, although only Pathé appears to have become dependent on US revenues to a very large extent.[35] For the French firms, the small size of the French home market probably made internationalisation essential for

[27] Gaumont annual report 1907. [28] Gaumont annual report 1908, 7.
[29] D'Hugues and Muller (1986: 29).
[30] The inventory of the old Parnaland, excluding four patents and its film negatives, was valued at 30,000 francs. Upon its creation Éclair in 1907 had a capital of 150,000 francs, which in January 1908 was increased to 500,000 francs (Le Roy and Billier 1995: 11–12).
[31] Meusy (2002); see also Chapter 5. [32] Le Roy and Billier (1995: 14–16).
[33] *Ibid.*: 29–30, 80.
[34] *Ibid.*: 61. The name of Éclair's US newsreel, the Éclair Animated Weekly, was changed into Universal Weekly after Universal distributed it.
[35] See table 6.1.

most firms that wanted to produce films profitably. Even smaller firms, such as Lux, set up some foreign subsidiaries.

One other large multinational was the Danish Nordisk company. Being located in a small market, the German market was the most important market for Nordisk, and according to its founder Ole Olsen the one that kept Nordisk going.[36] Nordisk followed a strategy similar to that of the later Hollywood studios: it tried to gain market power by increasing R&D costs (film making) and integrating horizontally and vertically. It made high-quality, big-budget films compared to other film-making companies, it tried through acquisitions and distribution deals to control a considerable share of the film supply, and increased its influence on distribution and exhibition even more by buying distribution companies and strings of theatres. In 1916, it owned between thirty and sixty theatres in Germany.[37] This was not a large number, but they were the biggest, most fashionable theatres, located in city centres – similar to the Hollywood studios.[38] It distributed about 20 per cent of all German films, at the higher end of the market.[39] In 1916 Nordisk also bought three big theatres in Zurich, a few other Swiss theatres and the Swiss distribution companies Franzos and Lang.[40] Nordisk also set up foreign sales agencies, including one in the US, but does not appear to have produced films abroad on any significant scale.

Like the French early movers, Nordisk understood it needed to own an international distribution network in order to benefit from the investments it sank in film production. The three French companies all set up studios in the US to produce films adapted to local tastes, while Nordisk produced exclusively in its large central operations in Copenhagen, ruthlessly cutting its films to fit different tastes, shooting happy endings for the West, and dramatic, unhappy endings for Eastern Europe, for example. Nordisk's location of production fitted with its aggressive expansion on the German, Swiss and Austrian market during the First World War, buying cinemas and distributors. Its fortunes turned in 1917, when the German government forced it to sell its German assets to the newly formed UFA company, in which it received a one-third stake.

The strategy of the Italian film companies, which became very successful in global film markets in the early 1910s, seemed to build on Italy's strength in industrial districts, as contrary to the US, France and Denmark, Italy had quite a lot of smaller film companies, who together

[36] Mottram (1988). [37] Kallmann (1932: 6; 9–13).
[38] See, for example, Gomery (1986, 1992).
[39] It distributed 337 films out of a total of 1,316. Kallmann (1932: 13). [40] *Ibid.*: 11.

were very successful and made one brand of film. In the years before the First World War, film had become Italy's fourth largest export industry. On the product level, the films also built on Italy's existing strengths in entertainment production. At the time most films were short, lasting at most fifteen minutes, were sold at low prices, a fraction of those of theatre tickets, and were of varying genres bundled with many others such as cartoons, comedies, newsreels, travelogues, dramas and 'gymnastics'. The Italian films had the length of a theatre play, were sold at theatre ticket prices, often not in cinemas but in rented theatres and were the fore-runners of the feature-film genre, the main difference being that they lacked the stars. The films were lavish, expensive historical spectacles like *Quo Vadis* and *The Last Days of Pompeii*, with lavish mass-scenes on classically themed sets. These products built on Italian know-how in theatre and opera production, on the Italian strength in literature, on Italy's past history and present monuments/remains, and, finally, on Italy's favoured climate, with a lot of sun of the right brightness and many different landscapes close together. The Italian companies, however, mainly traded their films, and did not set up large international organisations with international production subsidiaries as their French counterparts did. Some of them, such as Cines, had international sales offices, but often they relied on foreign distributors, who were able to capture a substantial part of the marginal revenues that their films generated.[41]

The early movers left global film production in the late 1910s and early 1920s, a time when their first-mover advantages had run out, and apparatus and film stock became less connected to film production. Éclair went bankrupt, and Pathé and Gaumont simply sold or closed most of their international operations. Charles Pathé, who sold Pathé's huge US operations to Merrill Lynch, remarked that he simply had to choose between locating the headquarters and central production operations of his company in the US, or leaving the business at a time when he could still sell it at a good price. Citing his age, he chose the latter. Pathé, Gaumont and a resurrected Éclair refocused on distribution and production finance in France.

Pathé knew the American film market well through his own experience. He wrote:[42]

> One should not forget, in effect, that before the war, of all global industries, the film industry was the only one of which the most important centre was in France. Its development did not find an equal in any [French] industry other than the

[41] See also the Kleine-Pasquali venture (Chapter 7). [42] See also Chapter 7.

defence industries. ... One can also take a more general view concerning France. The industrial creation of France has never left the country behind any other country in the world. But this is what happens to an industry like ours: when the rapid growth stops and it becomes a normal industry, the fight becomes more and more difficult for this industry, because the big countries, above all when they are very wealthy, are endowed more favourable than France, because their capacity to amortise is infinitely more significant and faster than ours.[43]

Pathé then remarked that cinema was not an easy business in the States, although more advantageous than in France. The profits of the big American companies were irregular, he wrote, except for the first two or three years of silent film. 'I saw a better market in raw film, amateur cinema and cinema in the countryside.'[44]

At the time the European firms were leaving international film distribution, American companies, including the emerging Hollywood studios, entered. They set up foreign distribution subsidiaries in many major markets in the late 1910s and early 1920s, but generally kept film production centralised in the US.[45] First through Commerce Reports and later through Trade Information Bulletins, the US Department of Commerce provided the US industry with detailed information about foreign film markets and foreign competitors. In the early 1920s it even set up a motion picture bureau for the collection of foreign market data. Only when talking pictures emerged in the late 1920s and protectionist policies increased, did the Hollywood studios start some foreign film production for a brief period, mainly in Britain and France, and also signed some co-production agreements with foreign producers.

The Hollywood studios received about one-third of their revenues from foreign markets, but were far less dependent on them than their European counterparts. While in the silent period, Hollywood studios could break even on their home market, European companies needed foreign sales to break even.[46] For talking pictures, Hollywood was probably able to just get by without any foreign sales at all, while European companies started to be able to just break even on their home markets.[47] Because the international expansion of the Hollywood firms has been extensively investigated and documented by others, we will not examine it in detail here.[48]

During the 1930s, British companies developed international investment strategies. The Gaumont-British Picture Corporation, by then an

[43] Pathé (1940: 60, 98). [44] *Ibid.*: 97. [45] See table 7. 5. [46] Bakker (2004b).
[47] *Ibid.* This can be expected as market size drives films' costs and not the other way around.
[48] See, for example, Thompson (1985); Vasey (1997); Trumpbour (2001); Segrave (1997).

independently listed British company, in which the ageing Léon Gaumont held only a small stake, set up a distribution subsidiary in the US and had distribution subsidiaries in several other important foreign markets. This strategy did not seem to work particularly well in the 1930s, and some firms used other strategies. Alexander Korda, a successful film producer, acquired a large stake in United Artists, which handled his distribution in the US and other countries.[49] The agreement ensured that Korda would receive a substantial share of the marginal revenues that his films generated. In the late 1930s, J. Arthur Rank consolidated the British industry by buying several distributors, producers and cinemas. He extended the international network of subsidiaries of Gaumont-British, but supplemented it with an alliance with Universal Pictures. Rank bought 25 per cent of the Hollywood studio, and in this way was ensured of US distribution and assistance in foreign markets where Rank's own distribution was weak. Rank still had difficulties with US distribution, though, given that US films often reached higher revenues, which forced him to increase his British production outlays substantially.

Alternative international strategies

During the 1920s, some medium-sized European firms tried to set up a European-wide network to market films internationally, rather than turn themselves into multinational enterprises. They competed with Hollywood through co-production and distribution contracts with other European firms. These attempts came to be collectively named the 'Film Europe' movement. Because American companies enjoyed a huge domestic market, the idea was that European companies should increase their 'domestic market' by way of long-term contracts and alliances.

The ideal of the 'Film Europe' movement was that a producer anywhere in Europe had access to the whole European market.[50] The larger companies were the most visible in this movement. In 1924, the German UFA entered an alliance with the French Aubert, and Pathé with the German Westi company. In 1926, UFA set up an alliance with Svenska and a French company, and the German Phoenix with Sovkino, the major USSR company. In 1928, the last large alliances took shape, of UFA with the Italian LUCE, of the German Terra with the French Cinéromans, and of Pathé with British International Pictures.[51] Similar alliances took place between smaller European companies.[52] The Film

[49] For a detailed analysis, see Miskell (2006b). [50] Thompson (1993).
[51] Thompson (1985: Chapter 4). [52] See Bakker (2004b).

Europe movement never became a success. Some point to the coming of sound film, the rise of fascism and the Depression as reasons for its failure, but it seems more likely it was due to an ineffective business model (see below).

The smallest European companies often chose to trade rather than form alliances. During the 1920s many of them had to export throughout the world to break even, even though their budgets were very low. A kind of dual market structure existed, with the Hollywood studios providing the high-quality, high-revenue-generating films that took very large market shares, and a band of very small producers with low market shares. These smaller producers, especially the European ones, generally offered products that were differentiated from the Hollywood fare, and offered consumers a side dish to their regular menu of films. They were often aimed at slightly different geographical markets as well, where Hollywood films were not always uniformly popular. Albatros, for example, as discussed above, made most of its revenues in Latin countries in Europe and Latin America, where apparently its films addressed an unserved need in consumers. These smaller firms often could survive because the differentiated quality went hand-in-hand with disproportionately lower film budgets. Since the films were expected not to generate very large revenues, they generally were sold outright by contract to most markets outside of the home market, rather than by revenue-sharing distribution agreements. Interestingly, this strategy seems to have been financially viable. In the case of Albatros, the return on investment appears to have been substantially higher than that of the Hollywood studios, although the absolute amounts were more than an order of magnitude smaller.[53]

The US independent production companies were probably in a similar position to their European counterparts, with the essential difference that their films were likely too little differentiated from those of the Hollywood studios to be saleable outside of the US, because of language, culture, themes and topics. Although there is no precise evidence for these small companies, it would not be unlikely that they made nearly all of their revenues in the US and generally were not able to export their films to many other countries because they could not reach threshold ticket-selling capacity.

These small European and American firms appear to fit well into the framework of novelty and flexibly specialised production put forward by Philip Scranton. Scranton points out that works on the industries of the second industrial revolution, roughly between 1870 and 1930, often

[53] *Ibid.*, and table 9.1.

focus on large companies, on first-mover advantages combined with national marketing efforts, on new technologies, on managerial hierarchies, on Wall Street capital, and on government (anti-trust) regulation. This results in the examination of only a small sample of all corporations; this small share is teleologically presented as the path to the future, and the modern business enterprise is made into a 'canon of significance', or the standard. Scranton signals a lack of attention to the heterogeneous character of manufacturing. In *Endless Novelty* he focuses on companies that differed from these modern business enterprises, firms which were specialised, often located in industrial districts, and which made specialty products.[54]

Scranton discerns four types of specialty firms: the 'integrated anchors' (large-scale firms focused on specialties), 'networked specialists' (clustered small and medium-sized companies), 'auxiliaries' (subcontractors), and 'bridge firms' (enterprises making both batch and bulk products).[55] The small European film companies such as Albatros probably most closely resembled networked specialists.[56] They generally were medium-sized and embedded in a network of other companies, suppliers, and customers, but also 'competitors' with which they sometimes made co-productions. To some extent these small companies all were monopolists, and did not compete directly with each other in the strict sense of the word – not in price or quantity, but more so in quality and a horizontally differentiated product. Some of those producers distributed through large companies that on the production side were strictly speaking their competitors. Yet, they maintained a business relationship with them and sometimes received capital from them or rented their studios.

The European firms also did one of the major things that Scranton paints as the benefit of US specialty production. They provided consumers with variety and diversity. They offered a different product for consumption alongside the standard Hollywood fare.

Conclusion

This chapter investigated why international transactions in the film industry generally took place through firms. Because films were capital goods providing a perishable product (seats at a specific time), their

[54] Scranton (1998: 3–24). [55] *Ibid.*: 3–24, 171–2, 223–4.

[56] Paradoxically, Hollywood only shifted to flexible specialisation during the 1950s, when the studios partially outsourced film production and production services (Storper 1989).

price depended both on expected performance and the threshold ticket-selling capacity necessary to recoup cinema fixed costs, meaning that some films could not be sold at any price. This made it difficult, but not impossible, for low-budget producers to compete. The dual industry structure consisted of a handful of large multinationals that accounted for the major part of international transactions by value, and a flexibly specialised fringe of low-budget producers, that often traded through the market, or through long-term contracts. The latter were not necessarily less profitable than the former. Given the small potential market for their films, they had to find a delicate balance between producing at low cost and delivering films with at least threshold ticket-selling capacity. The sparse evidence available suggests that some achieved a higher return on investment than the large multinationals, although their absolute profits were small. This is not inconsistent with the long-run stock price performance of small and medium-sized firms.

European multinationals generally were successful in the short and medium term. In the long run, however, they all left international production and distribution.[57] A few, such as Pathé and Gaumont, were successful in financial terms even when they exited, as they were able to get large sums for their foreign subsidiaries.[58]

Without multinationals, international trade in films would have been far more difficult, and producers would have been far less able to capture the rents to their copyrights and to guarantee screen access abroad. Production budgets would probably have been lower, and local firms would have made more profit because they could capture rents to the copyrights, but less profit because the average quality (production budget) would be lower, and less effort would have been made to tailor films to international tastes. In such a situation local production companies may have been able to compete more effectively, but this may have resulted in an industry with a far lower productivity and a lower average quality of an average spectator-hour.

The European host countries probably benefited most from multinationalisation, through lower-priced entertainment and a larger variety of spectator entertainment, including indigenous forms. If the international market had not been integrated at all, the result would almost certainly have been the use of far more inputs in live entertainment, higher costs, a lower quality of output and less variety.

[57] Bakker (2007d), however, identifies fourteen attempts by European firms since 1920 to re-enter international film production–distribution on a Hollywood scale, all unsuccessful in terms of survival. Australian and Japanese attempts were successful (see also Chapter 7).

[58] But more than ten years later, in the 1930s, both went bankrupt.

The winners in the quality race were not only the Hollywood studios, but also European consumers, who could consume a far greater variety of spectator entertainment. Not only was live entertainment more abundantly available, but consumers could also enjoy films from their own country and from many others. Sometimes films in their native language were a main course, often they were a side dish next to the Hollywood fare and other foreign pictures, while live entertainment was almost exclusively in their local language. Ironically, while their countries lacked a film industry comparable to Hollywood, these consumers probably enjoyed a far larger variety of filmed entertainment than their American counterparts. To consumers and their tastes we now turn.

10 Industrialising the discovery process

> Tastes and fashions, notably in popular entertainment, can be 'created' only within very narrow limits; they have to be discovered before being exploited and shaped. Eric Hobsbawm[1]

Culver City, August 1944. Producer David O. Selznick is supervising the final changes to *The House of Dr. Edwards*, the latest film by Alfred Hitchcock. Selznick has sunk nearly $1.7 million in the film and is determined to get it back.[2] Feeling uncomfortable about the title, he contacts Audience Research, a market research firm, to test several titles among cinema-goers. While *Hidden Impulse* and *The Couch* register little interest, *Edwards* – Hitchcock's favourite – and, finally, *Spellbound*, ring a bell. Selznick notices that while men prefer *Edwards* to *Spellbound* by a 15 per cent margin, women prefer *Spellbound* to *Edwards* by 13 per cent. Since women 'bring men to the theatre much more than men bring women', and Hitchcock's name already guarantees a masculine appeal, Selznick ignores Hitchcock and decides the ultimate title will be *Spellbound*.[3]

By the 1940s, adequate knowledge about consumer preferences had become essential for survival in the motion picture industry. Film companies had been among the first customers of market research firms using scientific research design and random sampling, which emerged in the 1930s.[4] Many films considered classics today were shaped by feedback from market research. Ever since the emergence of cinemas in the mid-1900s, the film industry had been obtaining detailed knowledge about the tastes, desires and habits of consumers. While life-cycles of other products were measured in years, or at least a season, those of early films were measured in days. While many other industries launched new products infrequently, the film industry launched them constantly.

The short product life-cycle forced film producers to track changes in consumer preferences closely. They had to observe and record how

[1] Eric Hobsbawm (1983: 307).
[2] Parts of this chapter were published in Bakker (2003a).
[3] Leff (1987: 160–1, 167); Haver (1980: 347–8). [4] Lockley (1950: 736).

customers reacted to their products, to quickly adapt products they were developing to changes in market tastes, and to apply effective marketing strategies. The short product life-cycle also meant that when a film company discovered an unsatisfied need, it could cater for it in a few weeks. The success of film producers was not primarily dependent upon technological innovation or scientific discovery, but on determining and meeting consumer tastes.[5]

Although several other consumer goods industries shared this characteristic, the early film industry was most like fashion goods industries. These industries had a similar extreme sensitivity to changes in consumer preferences and also launched new products constantly. They therefore shared a need to obtain detailed knowledge about the consumer. In the 1870s, for example, hat manufacturer John Jacob Astor employed an artist to sketch women's hats in the park, to help him determine the most popular fashions.[6] In the pottery and glassware industries, 'the ability to envision target audiences was essential for survival'.[7] These industries used 'fashion intermediaries', persons who observed shoppers browsing the shelves, or store managers who reported the latest tastes back to the manufacturer.[8]

Nevertheless, while fashion products lasted at least a season and were launched in batches, early films lasted a few weeks and were launched continuously. Second, the fashion industries could target market segments such as women, teenagers or the middle class, while the film industry had to reach as many segments as possible, before television.[9] Third, motion picture companies incurred large sunk costs and only small marginal costs. While fashion companies could adjust their output if a product proved unpopular, and sell unpopular products at rock-bottom prices, film producers had already incurred most of their costs.

This chapter, then, examines how methods of obtaining knowledge about consumers changed from ones close to those of the fashion goods industry, drawing on informal research by fashion intermediaries, into modern scientific market research, as was later also adopted by mass-producers of consumer goods. It investigates how changes in the industry structure affected market research, and how market information was used in business strategies.[10]

[5] Fitzgerald (1989: 45–58, 56–7), makes this observation for consumer goods industries in general.
[6] Chisnall (1997: 7). [7] Blaszczyk (2000: 1).
[8] *Ibid.*: 9–10, 12, 38, 105. Similar configurations existed in the clothing industry. See, for example, Godley (1996; 2001: 90–108).
[9] See below.
[10] On general historical research on marketing see Golder (2000), and for France, Creton (1997).

The adoption of modern market research was an important part of the industrialisation of entertainment. First, modern market research techniques formalised, automated and standardised the intuitive and informal approaches used previously by entertainment entrepreneurs, and in this way also made the information tradeable. Where as previously firms would generally have to hire someone with excellent knowledge of the market or organise their own way to get sales feedback and gauge customer reactions, the modern market research techniques enabled them to purchase and trade the information itself. Second, modern market research institutionalised the entrepreneurial discovery process discussed in Chapter 6 that had instigated the quality race in the 1910s. The entrepreneurial function of discovering new opportunities and arbitrating was thus partially automated, standardised and made tradeable.[11] Market research enabled film producers to discover across which dimensions films could be vertically differentiated and where additional expenditure would lead to larger additional sales. At the cross-section level, market research gave entrepreneurs information on how to make or change their films and how to compose their film portfolio. At the longitudinal level, market research led incrementally to the evolution of the industry as a whole and to long-run changes in the product characteristics. Third, the investigation of market research surveys and techniques yields further insight into the rise of demand in entertainment analysed in Chapters 3 and 4. Going one level deeper, it allows us to examine what consumer preferences looked like within the category of spectator entertainment expenditure, and how they shaped and interacted with business strategies.

The first part of this chapter reviews the whole development of the industry discussed in previous chapters through the lens of information about consumer preferences. The next two sections focus on the two most significant and earliest developers and adopters of modern market research, firms that brought market research to the motion picture industry: Sidney Bernstein's Granada Theatres and George Gallup's Audience Research.

The adoption of market research by the film industry

The aim of marketing is to make selling superfluous. The aim is to know and understand the customer so well that the product or service fits ... and sells itself.
Peter F. Drucker

[11] On the entrepreneurial discovery process see Kirzner (1985).

In the late 1900s, several American firms conducted rudimentary market research. In 1908 J. G. Fredrik founded Business Course, a company collecting market information, and in 1910 Charles Coolidge Parlin set up a commercial research division at Curtis Publishing Company, investigating consumers' buying habits in several specific markets, such as farm implements and department stores. In 1913, the *Chicago Tribune* conducted a door-to-door market survey. Sears kept records of its customers' names, addresses and buying habits, to which it tailored the set of catalogues it sent to them. In 1916, R. O. Eastman, Kellogg's advertising manager, founded the Eastman Research Bureau. One of his first clients, General Electric, commissioned an investigation into the public awareness of its Mazda trademark.[12]

Between the wars, market research became increasingly formal and systematic, using scientific sampling techniques.[13] Arthur C. Nielsen surveyed purchasing habits in drugstores, and George Gallup set up the first formal Marketing Research Department, within the advertising firm Young & Rubicam.[14] Fenner & Beane and Merrill Lynch, which later merged, were the first brokerage firms to commission detailed research on customers and to change their business models accordingly.[15] In Britain, market research was less common. There were a few exceptions, such as the confectionery manufacturer Rowntree and health drink maker Horlicks.[16] But the subsidiaries of American firms, such as Vauxhall under General Motors,[17] and the London subsidiary of the US advertising agency J. Walter Thompson, were pioneers in Britain.[18]

The development of market research in the film industry followed a similar path. Films were capital goods sold or leased from producer to distributor to the exhibitor, which used them to provide a consumer service. Changes in the contractual relationship between these three strata, changes in technology and organisation, and an increase in sunk costs all affected the ways in which film companies obtained knowledge about the consumers. During the industry's formative years, little market research was done. Producers made their films by trial and error, as costs were low, revenues limited and regular customers such as cinemas hardly existed. Film production was a low-cost and eclectic activity

[12] Larson (1992: 19–20); Chisnall (1997: 7–8). [13] Lockley (1950: 736).
[14] Larson (1992: 19–20). [15] Perkins (1999: 7, 121, 148).
[16] Fitzgerald (1989); Ward (1994). [17] Church (1993).
[18] Corley (1987). The National Institute of Industrial Psychology (NIIP) also carried out fourteen 'market studies' between 1929 and 1935. For corset maker Berlei (UK) Ltd., for example, researchers interviewed a representative sample of 1,000 middle- and upper-class women. 'NIIP Reports (Abstracts)', Section 7, File 10, NIIP Archives, London; *Ibid.*, Report 577.

involving many movies of different types and lengths, which were directly sold by producers to showmen.

The emergence of the first cinemas, which seated a few hundred people, revolutionised the industry's technology and organisation. Cinemas needed a reliable and continuous supply of films, whose audience interest could be anticipated. Producers and emerging distributors had little interest in market research because they sold film copies by the foot for a largely undifferentiated price. Although a successful title sold many more copies (despite rampant piracy) producers saw little of the additional marginal revenue generated by each copy in cinemas. This produced marginal profit only for cinema owners. Therefore, the latter were the first to do informal market research, mainly by audience observation and sales analysis. Carl Laemmle began his career conducting audience studies in Chicago for Hale's Tours, a Nickelodeon operator.

> For two days [Laemmle] counted the attendance of what went in to see Hale's Tours pictures. When he got through he had an accurate notion of what kind of people went to see the pictures, what hours of the day they found the time to do it in, and how many of them there were per hour and per day.[19]

Likewise, when Adolph Zukor opened a Nickelodeon in New York, he carefully studied customers' responses:

> I spent a good deal of time watching the faces of the audience, even turning around to do so. A movie audience is very sensitive. With a little experience I could see, hear and 'feel' the reaction to each melodrama and comedy. Boredom was registered – even without comments or groans – as clearly as laughter demonstrated pleasure.[20]

Years later, Laemmle would found Universal and Zukor, Paramount.

This emergence of cinemas was followed by another technological-cum-organisational change: the emergence of film distribution networks in the late 1900s. These film 'exchanges' concentrated information from exhibitors and sent it back to producers. Industry observer Benjamin Hampton noted:

> [The film exchange system] established a route of communication from audience through exhibitor to distributor and producer, enabling the nickelodeon patrons to make their wishes known to the makers of pictures. If spectators enjoyed a film and applauded it, the nickelodeon owner scurried around and tried to get more like it, and if they grumbled as they left the show he passed on the complaints to the exchange, and the exchange told the manufacturer.[21]

[19] Ramsaye (1926: 450), as quoted in Austin (1983).
[20] Zukor (1953: 42), as quoted in Ohmer (1997: 1).
[21] Zukor (1953: 46), as quoted in Austin (1983: 21).

This elementary feedback system was similar to the use of intermediaries in many fashion goods industries.[22]

First, cinemas and then these distribution networks together led to a third change in the industry. Around 1910 fictional films of 1,000 feet (fifteen minutes) became standard; later, between 1915 and 1917, came the feature film itself. In contrast to other formats such as news, sports or travelogues, fictional films could be planned and budgeted in advance, enabling a reliable supply to cinemas.[23] This change was reinforced by a synchronous change in the industry's contractual relationships: films started to be rented. This meant a higher share of marginal revenue flowed to distributors and producers, and so increased their incentive to craft successful films. Film companies devised strategies to lure consumers, first building their reputation and adopting trademarks, and then through stars, serials and famous stories. Nevertheless, these strategies were essentially intuitive, based more on trial and error than quantitative market research.[24]

The research commissioned by a major US producer–distributor, probably Paramount Pictures, marks the transition from a simple and intuitive approach to modern market research. In 1916, Paramount decided to advertise its trademark and pictures directly to consumers and hired an advertising agency. Stopping short of directly polling consumers, the agency sent questionnaires to exhibitors, asking which family member they thought decided on film and cinema, and which magazines they thought they read. The subsequent advertising campaign was based on the outcome: it addressed women and used fan magazines and women's weeklies such as *Ladies' Home Journal*.[25]

Another contractual change was the use of long-term, seven-year, contracts with stars.[26] Combined with the short shelf-life of films, this gave producers an incentive to measure their stars' popularity.[27] Most consumers saw a film only once, making market research more feasible on production inputs that could be re-used, such as stars, story types,

[22] Blaszczyk (2000: 12, 38, 105). [23] See Chapter 6. [24] See Chapter 8.
[25] Lewis (1930: 435–43). The companies' real names were kept secret.
[26] Gaines (1991: 148–59). Stars were production inputs, not products sold or leased to distributors and cinemas.
[27] Contrary to other products, after launch, films immediately moved into the growth and maturity phases, which could hardly be distinguished from each other, reaching their highest box office revenues shortly after opening. Sales promotion therefore started before product launch, and was intensive. If the film was successful, it was increased to maximise revenue, if it flopped it was stopped. Profit was only reached late in the product life-cycle, if ever. In the end phase profitability did not decline, because most costs were fixed and sunk, so ex-post any sale would improve profitability, and sales promotion was limited because revenues were (Cochrane 1927; cf. Caves 2000).

genres and formats. Film companies therefore increasingly used stars and stories to brand their films. Because films were made by teams, the research could also be used to assess each input's contribution to sales.[28] From 1915 onwards the *Motion Picture Herald* held an annual poll among exhibitors on box office potential of stars, presenting the results as a rank order. It was widely read throughout the industry, and probably provided a compass as to which stars to contract.[29] Fan magazines had organised reader polls in the US as early as 1909, but their accuracy was doubtful because readers sent in postcards, which affected representativeness and enabled manipulation.[30]

Initially the fictional film was a cost-saving technology, cheaper to produce than other formats. Paradoxically, when it became the industry standard, production costs increased, and continued to increase until the late 1940s. Because rising sunk costs increased the risk, they gave producers a further incentive for market research.[31] Synchronously, the lag between a film's production and release rose, from a few days in the early 1910s, to a few weeks in the early 1920s, to a month or more in the 1940s. This not only meant that interest costs further increased production costs, but also that the feedback obtained through sales analysis and consumer response became ever-more delayed. A company could already be busy producing several subsequent pictures when it received the market feedback from the previous film. Only better knowledge about the market could make up for the lag-related risk.

During the 1920s, renting for a fixed fee was replaced by renting on a percentage basis. This made even more of cinemas' marginal revenues translate into distributors' and producers' marginal profits, further increasing their incentive for market research.[32] Analysis of four-yearly samples of films from 1914 to 1964 shows that producers did indeed respond quickly to changes in consumer sentiment: during the Depression films portraying big business and wealth positively gave way to films criticising big business and being slightly more inclusive towards women and minorities. Despite their reliance on Wall Street capital and a draconian production code, the studios had to adapt their films to consumer preferences or go under.[33]

Clearly studios became ever more reliant on accurate knowledge of their consumers' preferences. But modern market research techniques were built only slowly. The earliest systematic consumer surveys were

[28] See Chapter 8.
[29] *La Cinématographie Française* held a comparable French poll from 1936–38.
[30] *Moving Picture World*, 1909; cf. the 1930s British polls in *Picturegoer*.
[31] Bakker (2001a: 466–7).
[32] Generally with a fixed sum as 'minimum guarantee'.
[33] May (2000).

not done by companies, but by scholars and social organisations concerned about the effects of cinema attendance, especially on children. A German study of 1909 was followed by many more, such as the Payne Fund studies in the US and the Mass-Observation studies in the UK in the 1930s.[34] Several of these surveys were published in the American *Film Daily Year Book*.

One of the first companies to undertake primitive market research was Universal, beginning in 1922. Laemmle had advanced from Nickelodeon owner to president of this Hollywood studio, but had not forgotten the importance of knowing his customers. As discussed in Chapter 8, he ran a signed weekly advertisement in the *Saturday Evening Post*, asking readers to state their favourite stars and to answer some questions. In a 1928 advertisement, for example, Universal asked whether respondents liked happy endings, and if Universal should retain unhappy endings when turning books or plays into films. Once, Laemmle even placed a job advertisement for a 'Master Psychologist' who could 'analyse plot-situations' and 'forecast public reaction.' Reportedly, Universal received a hundred letters a day and built a substantial mailing list, from which it selected 300 people whom it consulted frequently.[35]

Another form of primitive market research was fan mail analysis. Film studios kept track of fan mail because it gave them a rough indication of stars' appeal.[36] In the 1930s, all major Hollywood studios had fan mail departments. Each received between 18,000 and 45,000 letters or postcards a month, which were tabulated by star and the fan's estimated age, gender and location. The departments' heads claimed they could 'tell when a new actor or actress has "clicked" with the public from the kind of fan letters which begin to come into the studio: letters asking why the player was not given bigger roles'.[37]

Yet another way to obtain knowledge about the market was the 'preview', the test-screening before release. These started as informal events for studio personnel or nearby Los Angeles cinema-goers. Producer Harry Rapf of Warner Brothers, for example, would frequently change films after consulting a panel consisting of his driver, carpenters, electricians, the studio barber, a hospital intern, the gate keeper, the masseur, and their wives and children.[38] During the 1920s, previews became more serious, as studios paid attention to theatre location, audience

[34] E.g. Blumer (1933); Richards and Sheridan (1987). Miskell (2005) discusses several of the British surveys.
[35] *Saturday Evening Post*, 21 July 1921; Lewis (1930: 132–7).
[36] From the early 1910s, the French Gaumont company counted fan letters. Its star Renée Navarre received 300–400 letters daily (Aimone 1997).
[37] Rosten (1941: 409–13). [38] Hampton (1931: xxii).

composition and observation method. Irvin Thalberg at MGM used a first cut like a first draft. He always changed his pictures, reshooting whole scenes and doing numerous subsequent previews until he was satisfied.[39] Selznick had a similar approach: when at the first preview of *King Kong*, the ape's pursuers were attacked by huge slimy insects and snakes and graphically eaten alive, 'the screaming on the screen was matched ... by the screaming of the audience ... a great many of whom left; those who stayed kept up a buzz of conversation for the next few minutes making it difficult to keep up with the continuing story.' The scene was removed, leaving the special effects expert heartbroken.[40] World Wide Pictures, which distributed foreign pictures in the US and Canada, used previews in New York to set its rental rates, because it was difficult to predict the box office appeal of foreign movies, and because pictures were not rented in large blocks, which would have limited the effect of flops.[41]

In addition to previews and early market research, sales analysis remained an important tool in building knowledge about consumer preferences in the 1920s and 1930s. For the major studios, which produced large film portfolios during a year, launching a portfolio over a season could serve as a substitute for costly and impractical market research, as failures and successes could cancel each other out.[42] During the 1930s, Warner Brothers, for example, carefully tracked the box office revenue of its films and adjusted its star portfolio accordingly.[43] In 1939, producer Samuel Goldwyn, after studying the financial returns of Merle Oberon's pictures, cancelled her contract.[44] Although the constant product launches made sales analysis a handy tool, the increasing lag between production and release gradually reduced its usefulness.

The integration of production and distribution in the late 1920s made market research even more important. After a merger wave, eight major Hollywood producer–distributors remained. The five major ones also owned cinema circuits, each in a different US region. This meant that a still higher share of the marginal revenues in distribution and exhibition would translate into producers' profits, further increasing their incentive for market research.

The emerging majors also integrated vertically internationally. They set up foreign distribution subsidiaries rather than sell rights to local distributors, maximising the rents they could capture from their copyrights and guaranteeing strategic access to screen-time. This increased the

[39] Schatz (1988). [40] Haver (1980: 113). [41] Lewis (1930: 288–94).
[42] Sometimes one failure endangered a studio, such as *Heaven's Gate* (1981), which practically bankrupted United Artists, forcing a merger with MGM. A portfolio strategy analysis is Sedgwick and Pokorny (1998).
[43] Sedgwick and Pokorny (2001). [44] Berg (1989: 334).

incentive to make pictures appealing to foreign audiences. Sales analysis had been important for assessing international appeal of future films. The Danish Nordisk company, for example, a large European film company in the 1910s, focused nearly exclusively on export markets, because of the small Danish market. It relentlessly cut its films to the needs of different markets. For the same film it often filmed a happy ending for Western markets, and a sad, dramatic ending for Eastern European markets.[45] Likewise, in the 1930s, low-budget US westerns were often more popular outside the US. United Artists, for example, bought a series of six Rex Bell movies specifically for export.[46] But for a long time, sales analysis was almost the only way of gaining information on foreign markets, because most were too small to warrant elaborate consumer polls, and many even too small to send representatives.[47]

Overall, therefore, the changes in contractual relationships, technology and rising sunk costs, encouraged film companies to invest in ever more reliable estimates of consumer demand. In the early decades these were mostly informal and intuitive. Increasingly more reliable techniques were devised, such as surveys, previews and sales analysis. But all these were precursors to the modern 'scientific' market research that emerged in the 1930s. A turning point was probably the pricing of *Gone with the Wind* in early 1939. A Gallup poll commissioned by newspapers had shown the film's potential audience was 55 million – the largest ever for a picture. With this information, Selznick, the producer, was able to convince a reluctant MGM, the distributor, that higher prices were viable. The picture was 'roadshown' at a price range of $0.75–$2.20. Key cities received a 'double exhibition format', with one luxury, high-priced theatre, and a second venue showing for $0.75–$1.10, when an average cinema ticket cost $0.25. This novel pricing strategy substantially increased profits.[48]

Soon after, independent market research firms emerged. The two major ones were Audience Research and the Motion Picture Research Bureau (MPRB).[49] The former worked for several studios, the latter exclusively for MGM. Smaller firms included the Roper Organization, Research Services, and the Opinion Research Corporation, all of which

[45] Brownlow and Gill (1998). [46] Vasey (1997: 161). See also Chapter 7.

[47] It was actually the US government who started to survey foreign markets. In the 1910s, it published short consular reports on foreign film industries in the *Commerce Reports*. In the 1920s it set up a Motion Picture Division inside the Bureau of Foreign and Domestic Commerce, that gathered basic quantitative information, such as number of cinema seats, average rental rates, market shares, imports, exports, and invested capital.

[48] Ohmer (1999: 66); Memo to Al Lichtman, vice-president MGM, 20 October 1939, 'not sent', printed in Selznick (1972: 223–7).

[49] Schatz (1997: 68–71).

probably also conducted market research for other industries.[50] In Britain, the detailed polls of Granada Theatres foreshadowed the advent of modern market research. All the firms segmented the market by age, gender, income and location.[51]

This new market research was closely connected to methods developed for the radio industry. P. F. Lazarsfeld, who ran the Bureau of Applied Social Research at Columbia University, primarily researched radio audiences, for example, but at times diverted to motion pictures. Although his research was largely academic, he looked for clues applicable to companies' business strategies, in contrast to the earlier social studies. He showed, for example, that word-of-mouth recommendation was the key for rapidly reaching high brand-awareness, because it made the picture sell itself. This word-of-mouth recommendation could best be influenced by what Lazarsfeld called taste leaders: socially active, frequent film-goers under twenty-five, who also read magazines and listened to radio extensively, who were in the same social class as those they tended to advise. Crucially, taste leaders could be influenced by studio publicity or advertising.[52]

The link with the radio industry was also important for the development of new, more 'scientific' preview techniques, which tracked audience interest scene-by-scene. The Motion Picture Research Bureau used the Cirlin Reactograph and the Lazarsfeld-Stanton Program Analyser, originally designed to measure radio listening habits.[53] Audience Research used the Preview Jury System.[54] One of its employees, Albert Sindlinger, was a former cinema-owner who had bugged cinema restrooms to discover patrons' tastes. Sindlinger developed the Teldox system to preview plays, and, reportedly, out of eight plays predicted as likely to succeed according to Teldox results, seven were successful on Broadway, and, out of seventeen likely to fail, sixteen actually failed.[55]

Early market research: Granada Theatres Ltd.

In Britain, by the late 1930s, media market research was increasing. In 1936, the BBC started the Listeners Research Department and Gallup

[50] Golden (1941: 29, 45).
[51] Ward (1994) shows that, in 1930s Britain, Horlicks also identified specific market segments.
[52] This concept came close to the 'opinion leader', a commonplace in later days (Lazarsfeld 1947). Lazarsfeld also found heavy radio-listeners were heavy movie-goers and vice versa (Lazarsfeld and Kendall 1948; cf. Jarvie 1970: 308).
[53] Handel (1950); Simonet (1978). [54] See below.
[55] *Ibid.*; Seldes (1950: 222). It is unclear whether Teldox was tested reliably and independently.

founded the British Institute of Public Opinion, which also surveyed media consumption.[56] Granada Theatres, a London cinema circuit, was an important early-adopter of market research, and had already started polling its customers in the late 1920s. Founded during the 1910s as Bernstein Theatres, it was managed by Sidney L. Bernstein. In 1928, Bernstein sold a 51 per cent stake to the Gaumont-British circuit for a reported £250,000, but continued to manage his circuit separately.[57] With the proceeds he bought more cinemas. In 1934, capital and reserves were £300,000 and profits £31,500.[58] In 1936, Granada sold nearly 11 million tickets, 1.2 per cent of all British admissions.[59] Its cinemas grew from ten in the late 1920s to thirty-four in 1939, to fifty-six by 1949.[60]

Bernstein's influence in the industry reached far beyond his circuit's size. A respected industry figure, he passionately supported British films, founded the Film Society, published policy pamphlets and cultivated contacts with US studio heads.[61] He was a local Labour councillor, served as the film advisor of the Ministry of Information, and from 1944 was Head of the Psychological Warfare Division.[62] He arranged agreements on US film imports, supervised propaganda films, and asked Hitchcock to produce a film on the German concentration camps.[63] After the war, Bernstein and Hitchcock founded Transatlantic Productions, which produced two films. When in 1955 the major British circuits refused to show Charlie Chaplin's British-produced *A King in New York*, because of his alleged communist sympathies, Bernstein distributed his friend's film, something which he advertised widely.[64] Shortly afterwards he launched one of the first commercial television stations, Granada, which eventually pushed his cinemas to the background.[65]

[56] Chisnall (1997: 9). [57] Moorehead (1984); Eyles (1998).

[58] According to company publicity, *Ibid.*: 111. A letter from Gaumont British Picture Corporation Ltd. to Sidney L. Bernstein, 17 April 1930, File D, Box(B)22A, Sidney L. Bernstein Collection (SLB), mentions £404,000, as the 'capital value theatres for insurance purposes' of eight cinemas; in 1934 at least eleven existed.

[59] *Ibid.*: 122. Granada's cinemas being first-run and in London, market share in revenue was probably higher.

[60] *Ibid.*: 137.

[61] *Ibid.*; Moorehead (1984); Jeremy and Tweedale (1994: 15–16); Bernstein (1939).

[62] Attached to the Supreme Headquarters Allied Expeditionary Force (Jeremy and Tweedale 1994; Moorehead 1984: 84–5). As council member, he accomplished the provision of theatre space and equipment for all local schools.

[63] Sussex (1984: 92–7). [64] Eyles (1998: 165–6).

[65] Davis *et al.* (1981). Under Bernstein, Granada produced several lasting television programs, such as *Coronation Street*, *What the Papers Say* and *World in Action*. Bernstein was made a life peer in 1969 and became Baron Bernstein of Leigh. (Jeremy and Tweedale 1994).

Granada gathered information about its customers in several ways. Initially, each cinema manager wrote a monthly, later weekly, report to the head office, which mapped audience responses and suggested improvements. Their reports were largely based on intuition and anecdote, such as: 'Increased receipts largely due to bad weather. Patrons show a definite dislike for Western films, more because of their bad quality than their type. The appearance of Elman and his band proved a big draw on May 23rd',[66] or: 'Willesden found *Dinner at Eight* rather a disappointment. Its entertainment value was neither simple enough nor direct enough for them. The Beery-Harlow-Lowe stuff could have been built into a feature which would most likely have eclipsed *Dinner at Eight* at the box office. These top-heavy all-star shows, however, never seem to make any bulges in our cash records.'[67]

Between 1927 and 1955, Granada carried out eight questionnaires among customers of ten to twelve cinemas in and around London.[68] These added a direct channel to the consumer. In 1934, for example, the survey covered eleven cinemas totalling 16,575 seats.[69] Granada also separately polled celebrities from politics, the clergy, peerage, arts and business. The questions focused on cinema-going habits (which cinemas did consumers visit, how often, and why) and on film preferences (favourite genres, story types, stars, directors, formats, sound, single/double feature).[70]

Granada segmented its customers by sex, ages and 'class', which was derived from the cinemas' neighbourhoods (table 10.1). These were divided between 'poor' and 'petty-bourgeois', with two labelled 'county + poor + rural' and 'county'.[71] Most cinemas were in the 'richer' neighbourhoods. Granada probably found segmenting important because each single cross-tabulation was expensive and slow before computers. The substantial differences in stars' popularity across segments indicates that segmenting made sense. In the 1932 poll, Granada researchers found that British films were more popular in the countryside than in

[66] File 'Theatre monthly reports, 1934', SLB, B47, Rialto Leytonstone, May 1930.
[67] File 'Theatre weekly reports, 1934', SLB, B47.
[68] *Box Office*, 4 February 1956, p. 40. [69] 1934 survey, SLB, BBQ1.
[70] A 1950 report criticised the method: 120,000 questionnaires distributed, 20,000 returns tabulated, when 2,000 sufficed, and longevity created a self-selected sample. G. R. T., 'Some Observations on the Bernstein Questionnaire', 5 October 1950, SLB, BBQ2: 5.
[71] Mayer (1948: 269–71) carried market segmentation further. Attendance frequency by income, education and occupation showed that the lower the income and education, the higher cinema attendance. Munitions workers went 3.4 times a month, agricultural workers only 1.0 times.

Table 10.1 *Popularity and market segmented by income and age for top-3 movie stars, around London, 1934*

			Income			Male (age)				Female (age)			
	Name	All	Poor	Middle	Rich	<21	21–40	40–60	>60	<21	21–40	40–60	>60
Popularity	Arliss	11	10	11	11	9	11	15	14	9	9	15	13
	Gable	7	6	6	7	5	5	3	6	12	8	4	5
	Beery	5	6	4	5	7	9	7	4	3	3	4	2
	Shearer	12	10	10	13	9	12	11	13	11	14	12	15
	Dressler	10	11	10	9	9	11	11	12	7	9	13	10
	Garbo	7	6	6	8	5	6	6	5	8	8	7	6
Market	Arliss	100	15	19	66	12	19	8	1	16	24	17	3
	Gable	100	14	17	70	10	14	2	1	35	30	7	2
	Beery	100	18	15	67	18	32	8	1	13	18	9	1
	Shearer	100	14	16	70	10	19	5	1	19	32	12	3
	Dressler	100	19	20	61	12	22	6	1	15	26	15	2
	Garbo	100	15	17	69	9	17	5	1	24	31	12	2

Notes: top-3 male and female stars are given. Full star names: George Arliss, Clark Gable, Wallace Beery, Norma Shearer, Mary Dressler, Greta Garbo.
Popularity refers to the percentage of respondents who named the star as favourite. Market refers to the percentage of all responses for a star in a particular segment.
Source: Sidney L. Bernstein Collection, British Film Institute, London.

suburban London, 'perhaps because the English province is more insular, more cut off from the life of other countries, as reflected in the assumptions and the background of other films; to understand the background of an American film requires no doubt a cosmopolitanism which is, even by a shade, more lacking in the countryside.'[72]

Granada also found that the popularity of stars varied substantially across segments. Clark Gable, for example, was liked nearly twice as much by women than by men, and mostly by women below twenty-one and richer customers (table 10.1). Two actors who were of roughly similar overall appeal, often served different segments. In contrast to Gable, George Arliss was liked almost equally among the sexes and the poorer and richer segments, for example. Only his popularity across age-groups varied, being highest among consumers above forty. The combination of popularity in a segment with its size enabled a studio to estimate the likely size of a star's market. The popularity of George Arliss and Norma Shearer among older consumers, for example, gave little incentive to book more of their films, because older consumers hardly watched films.

Bernstein asked his friend Angus McPhail, of the scenario department of Gainsborough Pictures and later Gaumont-British's film production subsidiary, to comment on the questionnaires. McPhail wrote lengthy reports. In 1927 he noted:

> The first section [celebrity responses] is ... of comparatively little value to exhibitors, renters or producing companies. The second section, on the other hand, is of immense practical value from beginning to end. The questioners are all normal patrons of normal cinemas in normal neighbourhoods. Their answers are free of the snobbery and self-importance of the answers to the first section; and they are frank and unbiased because they are not dictated by the necessity for circumspection.[73]

The researchers liberally speculated about the causes of differences in star-popularity. On the 1934 questionnaire, for example, they noted:

> Gracie Fields draws about all her popularity from among the older patrons, and Jean Harlow from among the younger. ... More men than women for Marlene Dietrich, more women than men for Greta Garbo. This is the same as in 1932. ... The Garbo-Dietrich comparison is exceedingly interesting. Though one might have guessed that Garbo would have all the women and Dietrich all the men. Garbo is the better dressed. In exposing herself she usually exposes the whole figure in relation with some gown. Dietrich on the contrary is continually

[72] 'Report on 1932 survey', File 1932, BBQ2, SLB: 18.
[73] A. McPhail, 'Analysis of replies', File 1927/1928, BBQ1, SLB. On McPhail see also Chapter 7.

exposing these particularly and conventionally decorative parts usually used as a weapon in the nineteenth century music hall. Dietrich with these tricks and her general attitude is obviously interested in the men she plays with. While the women fans – unconsciously or otherwise – have recognised as homo-sexual Garbo's boredom with all her men opposites.[74]

In 1936, Granada asked the National Institute of Industrial Psychology to assess the responses to the Bernstein questionnaire. A. M. Lester wrote that questions did not always distinguish between audience segments.[75] A question on best starting times, for example, was unusable, because the most frequently named time was halfway through the evening, which would certainly keep away customers who only could go early or late. Lester advised changing the questions to obtain definite information for producing or booking films.[76]

> Market research ... should aim at providing information which will assist actual policy decisions. This may sound an obvious platitude, but it is extremely easy to find oneself inserting a lot of questions whose answers come under the heading rather more of general interest than specific information.[77]

This observation begs the question of what role the questionnaire played in Bernstein's business strategy. The surveys' large samples and detailed cross-tabulations must have cost Granada dearly. Costs of the 1946 questionnaire amounted to £3,379, and Granada's mail room was severely disrupted by incoming responses.[78] A 1950s critical report alleged that Granada failed to distinguish between four main purposes: 'to obtain general publicity for the company; to give the audience the feeling of being attentively watched by management; to obtain information useful in running the circuit; to provide data which can be used as "ammunition for negotiation", e.g. advertising, double features'. The author thought Granada hardly used the questionnaire for management decisions or film booking. On specific questions, such as on non-smoking

[74] 'Report on 1932 survey'. Handel (1948) also addressed this issue, which was apparently important for marketing. Cf. Jarvie (1970: 283).

[75] Letter A. M. Lester, NIIP, to Edward Porter, Bernstein Theatres Ltd., 3 February 1936, BBQ2, SLB.

[76] Letter A. M. Lester, John Haddon & Co. Ltd., Incorporated Practitioners in Advertising, to Ewart Hodgson, The Granada Theatres Ltd., 29 April 1940, BBQ3, SLB. Lester had left NIIP, but still advised Granada.

[77] *Ibid.*

[78] 'Expenditure on questionnaire 1946', BBQ2, SLB. Previous questionnaires' costs must have been substantial: although the size and scope of NIIP's 'market studies' were probably smaller, costs were a fraction of Granada's – if previous costs were comparable to the 1946 questionnaire (which cost £2,299). In 1933, market studies for Southall Barclay (manufacturing chemists), Wright (soap) and John Cotton (tobacco) cost £90, £188 and £25, largely consisting of wages. Account book, Costs of investigations 1933, NIIP, Section 7 File 14.

nights, no action had been taken, although that would have generated 'lots of publicity' while inaction jeopardised customers' goodwill.[79]

The prime purpose of the questionnaires was to generate publicity. Granada widely distributed press releases, and many articles appeared liberally mentioning Bernstein and Granada.[80] In its craving for publicity, Granada sometimes overstated the number of respondents. In 1927, for example, it boasted 250,000 respondents, while unpublished tabulations show only 1,200.[81] The celebrity survey was probably done solely for publicity and Bernstein's reputation, because it showed celebrities hardly ever watched films. Another industry figurehead, Alexander Korda, manager of London Film Productions, also published a questionnaire in the *Daily Mail* so general it could only have served publicity purposes.[82]

A second purpose was to yield ammunition for Bernstein's industry campaigns. A fervent supporter of British films, he always inserted questions about the topic. The accompanying letter to the 1928 questionnaire stated: 'The future of films, and particularly of British films, is in the balance just now. This questionnaire is an attempt on our part to help swing the balance the right way.' The questions were just as biased: 'Do you consider that an abundant supply of representative British pictures is essential for the propagation of—(a) British ideals? (b) British business ethics?'[83] Questions on the double feature and Sunday openings probably also served industry campaigns.[84] In 1950, Granada solicited questions for a planned questionnaire from British producers: 'We feel that the Bernstein Questionnaire can be a powerful influence in the "Bigger Business Drive". ... From [the questionnaire] can be diagnosed the general nature of the complaint, along with an indication of the shape of the cure.'[85]

But the questionnaires were also used to estimate a film's likely market size. For instance, it is probable that Granada's and Gaumont-British's staff used the questionnaire for film booking. Staff had to assess a prospective film's audience appeal, either as a first feature or as a second

[79] G. R. T., 'Some Observations on the Bernstein Questionnaire', 5 October 1950, SLB, BBQ2: 4, 8, 17.

[80] E.g. 'The most popular film stars', *Daily Chronicle*, 3 April 1929: 5; 'A Kinema Ballot', *Manchester Guardian*, 3 April 1929; 'A Kinema Ballot', *Daily Film Renter*, 3 April 1929. Eyles (1998: 114) also concludes that the polls served publicity.

[81] File 1927, BBQ2, SLB; R. Ford (1937: 70), reports 160,000 respondents.

[82] Wood (1986: 135).

[83] 1928 Questionnaire, BBQ1, SLB.

[84] *Ibid.*: 121–2. Cf. Street (2000: 125–33).

[85] Undated letter, c. 1950, File D, BBQ7, SLB. Bernstein prepared a similar letter for US producers, offering help with the 'many points puzzling you about film-going habits in the British Isles'.

feature in a double-feature program, and so wrote a short report evaluating the film's quality and market after viewing.[86] On *The Feathered Serpent*, for example, the viewer noted: 'Edgar Wallace story, with the usual red herrings. Narration at times obscure, and the acting lacks conviction. Author's name is best bet, and can possibly be used as support for the smallest theatres.' And on *Courageous*: 'Sentimental drama. Slender story, but helped by the good performances given by Barbara Stanwyck & Frank Morgan, and by Ricardo Cortez & Lyle Talbot in minor roles. This will perhaps have most appeal for the women and better class patrons. Do not think we should feature this.'

Given the many references to gender, age, location and social class of the potential audience, the questionnaire's findings on audience structure probably helped with booking. Bernstein acknowledged this in a letter to respondents: 'The information thus gathered, which is unobtainable by any other means, will prove of immense value in the arrangement of film programmes calculated to appeal to the majority of patrons.'[87] Bernstein staged live entertainment in each cinema one week a year, organised 'amateur art competitions', introduced the cheap 'Children's Matinee' and numerous other innovations, all no doubt focused on luring specific audience segments into his cinemas.[88]

Furthermore the questionnaire provided control data against which to check the viability of new cinema sites. Whenever Bernstein considered a site he would send in market researchers with questionnaires on tastes, occupations and cinema-going habits. If the responses looked promising, Bernstein would submit a bid.[89] Bernstein's knack of site research would later surface in his choice of Manchester for his television station: 'I looked at two maps. One showed population density. The other showed rainfall.'[90]

Finally, the questionnaires were probably used by Gainsborough and Gaumont British for producing or acquiring new films, literary properties and screenplays.[91] Bernstein almost certainly used his own knowledge about the market while producing *Rope* and *Under Capricorn* for Alfred Hitchcock in the late 1940s. For instance, when Bankers Trust refused to finance *Rope* because James Stewart had dropped in the

[86] The 1927 Cinematograph Act forbade block-booking and blind-selling in the UK.
[87] Standard letter for 1937 questionnaire; Eyles (1998: 113).
[88] The questionnaires probably helped Bernstein to plan these happenings. One question, for example, asked whether customers liked an organ solo, and for how long, helping Bernstein to assess if the distinguished organists he contracted were worth the money.
[89] Moorehead (1984: 104).
[90] Eyles (1998: 174). Granada Television continued the tradition of the Bernstein Questionnaire in its Viewership Survey.
[91] Because the Gaumont-British archives have not been traced, verification is impossible.

star ratings, Bernstein nevertheless pressed ahead and was proved right by the film's profits.[92]

While the Bernstein Questionnaire clearly generated useful publicity, it was also a serious attempt to gain knowledge about the consumer. It was an advanced example of 'pre-scientific' market research, carried out over a long period, with effort and enthusiasm. By the early 1940s, however, Bernstein was evidently aware of the reliable survey methods others were using. In July 1942, when visiting the US for the Ministry of Information, he was summoned by the British Embassy about *Mrs Miniver*, a film about an English woman in war time. It sold 1.5 million tickets in ten weeks, but the Embassy thought it gave a shocking and distorted picture of Britain. Bernstein rang up Gallup, who conducted a survey showing that respondents who had seen *Mrs Miniver* or two other pro-British movies, were 'seventeen per cent more favourable towards Britain in their feelings than those who had not', which helped Bernstein appease the Embassy.[93] Equally, when Hugh Trevor-Roper, after examining Hitler's bunker, sent him the draft of *Last Days of Hitler*, Bernstein asked Audience Research to examine the American public's attitude towards a film version.[94] Finally, handwritten notes for an article, possibly by Bernstein, raise several technical issues about sampling methods and questionnaire design, showing that the questionnaire did not exclusively serve publicity purposes or Bernstein's industry campaigns.[95] It was the principal forerunner of modern market research in the British film industry.

Modern market research: Audience Research, Inc.

Although pioneering, Bernstein's market research did not make extensive use of modern science techniques such as random sampling or other sampling methods and advanced statistical analysis of results. The findings also remained within the company: they were not traded, and some general results were given away freely to the public. In the US, about a decade after Bernstein began with his surveys, George Gallup applied advanced sampling techniques and statistical analysis from the social sciences to market research, managed to extract more information

[92] The drop was caused by Stewart's Air Force job. Fortunately for Bernstein, Stewart waived his fee for a percentage, eventually earning three times as much. (Moorehead 1984: 175).

[93] *Ibid.*: 141–2. [94] *Ibid.*: 177.

[95] 'Kine Weekly', unsigned, undated, c. 1946, File E, BBQ3, SLB. Granada also corresponded with the British Institute of Public Opinion (BIPO) about carrying out the 1946 Questionnaire for Granada, but nothing came of it. Letter Henry Durant, BIPO to Ewart Hogson, Granada Theatres, 6 August 1946, File B, BBQ5, SLB.

that was directly profitable, and managed to make the information tradeable and sell it to outside firms.

In the US, media research had developed considerably since the late 1920s. Gallup actually started his career analysing newspaper reading habits. His findings that the picture page and comics were most widely read led to a substantial increase in advertisements using comic strips.[96] In 1935, he founded his illustrious polling firm, the American Institute of Public Opinion (AIPO). Gallup included film-related questions in the polls, possibly using them as a shop-window to interest film companies.[97] In early 1940, Gallup set up Audience Research. George Schaefer, president of RKO, a major studio, offered an exclusive contract for the first year.[98] Gallup later called Audience Research's work in the 1940s 'some of the best research that I've ever seen or ever had part in'.[99]

The firm was located in Princeton, New Jersey, along with AIPO. David Ogilvy, who later founded the advertising agency Ogilvy & Mather, was its first director. It had fifty to sixty employees, who did research design, tabulation and analysis, but used the c.1,000 AIPO interviewers for field interviews, enabling Gallup to achieve economies of scope.[100] In 1941, Audience Research also started research for other film producers. By 1946, it had fourteen regular customers, among which were at least half the Hollywood majors.[101] Besides commissioned work, many industry executives subscribed to Audience Research's *Continuing Audit of Marquee Values*, which measured stars' popularity every few months.

Audience Research challenged prevailing industry notions. It found that the Motion Picture Producers and Distributors of America systematically overstated the number of admissions at 82 million a week. Audience Research showed they were only 54 million, and corroborated this with states' tax data. It also showed the grand majority of picture-goers were poor and young: 65 per cent were under thirty, and nineteen-year-olds went the most. Gallup advised studios to lure older and richer consumers, but also to make big budget movies for the nineteen to twenty-five age segment and carry along as many other segments as possible, or to make low-budget movies for specific age groups.[102]

[96] Even sports pieces, love columns and obituaries received more attention than news and political pages (Ohmer 1999: 63).
[97] Ohmer (1997); 'Gallup has plan for measuring grosses with "research insurance" ', *Motion Picture Herald*, 26 July 1941: 33–4. Cf. Schatz (1997: 68–71).
[98] 'Gallup's Pan On Pix Adv.', *Variety*, 14 August 1940: 5, 19; Golden (1941).
[99] Simonet (1978). [100] *Ibid.* [101] Weaver (1946c: 28–9).
[102] 'Gallup has plan for measuring grosses with "research insurance" ', *Motion Picture Herald*, 26 July 1941: 33–4.

Since its only major competitor used a similar approach, Audience Research's methods were typical. Careful to obtain representative samples, it carried out non-commissioned surveys on general cinema-going habits against which to test particular cases. Some questionnaires contained 200 questions taking over an hour to ask. Audience Research carefully designed the questions and inserted control questions. Film titles were a key determinant of success, and Audience Research tested the popularity of alternative titles against two controls out of a secret list of forty highly popular titles.[103] Gallup explained:

> Audience Research cannot tell a producer whether or not a story is worth $20,000, $100,000, or $500,000, but Audience Research can point out that this story starts with initial interest equal to, greater than or less than other properties which were sold for $20,000, $100,000 or $500,000.[104]

Another method Audience Research perfected was the preview. Using its 'Preview Jury System', it supplied 100 people closely resembling the cinema-going population with a Hopkins Electric Televoting Machine, a telephone dial that could be pulled into five positions: 'like very much', 'like', 'neutral', 'dull', 'very dull'. The dials connected to a central 'seismograph', which plotted a line on paper, to be compared with the film sequences. After recuts or reshoots, a new sample audience would see the film, as many times as necessary. The first cut was often longer than intended, enabling the deleting of entire unpopular scenes.[105]

Exploiting its large data library, Audience Research started to offer forecasts of total US box office revenue (apparently, *after* the picture's initial opening).[106] It boasted that these never 'missed the mark more than 3 per cent'. Figure 10.1 shows how it used market research data for the forecasts.[107] The top line traces the general public interest, measured with the question whether they would want to see the picture. The other three lines show penetration, which is measured with questions testing the respondents' knowledge of the picture and their plans to see it.[108] The picture was clearly more popular in New York. During its release, the national publicity campaign increased penetration in

[103] Weaver (1946b: 39).
[104] 'The British Cinema at the Gallup', *Documentary News Letter*, June–July 1947: 99.
[105] Weaver (1946a: 37). Except for one year, MGM was under exclusive contract to Handel (Simonet 1978).
[106] They statistically compared the revenue growth pattern during a picture's first few days to similar data for numerous previous films. A large 'data library' was needed and probably substantial computing power. Nowadays, this type of box office forecasting has become a routine practice in Hollywood.
[107] Weaver (1946c). Results verified by Weaver.
[108] Audience Research Institute, 'New York City Motion Picture Market Study', 1940: 27.

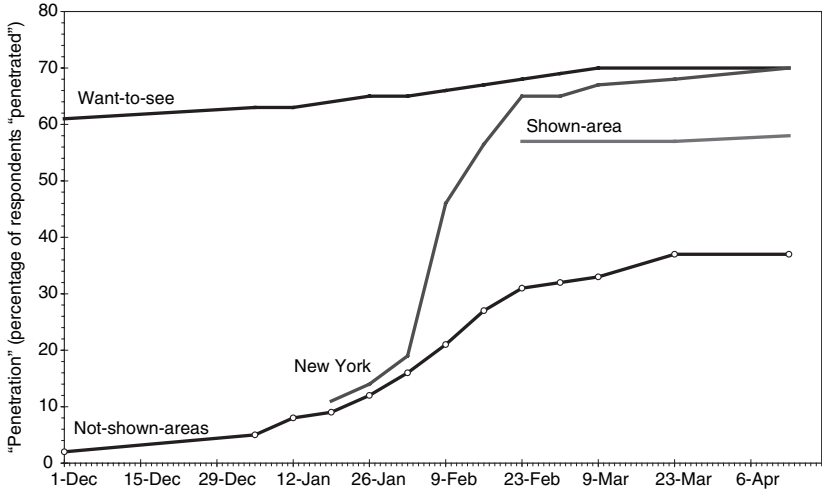

Figure 10.1 Awareness among various groupings of US consumers of a major motion picture released in February 1946, December 1945–April 1946

Notes: Want-to-see = nationwide percentage of consumers who wanted to see the movie.

Not-shown-area = percentage of consumers 'penetrated' by the movie's publicity in areas where it had not yet opened.

New York = *idem* for New York area.

Shown-area = *idem* for regions outside New York where the picture had opened.

Source: Audience Research Inc.

not-shown areas. Audience Research calculated its box office forecasts from the difference between market-want-to-see and the not-shown-penetration using a secret 'simple mathematical formula', taking into account demographics, entry prices and geographical differences. The studio confirmed the forecast had been correct within a 3 per cent margin.[109]

In a similar manner to Granada, Audience Research segmented the market into sex, age and income. In table 10.2 considerable differences show between income levels: James Stewart was eleven percentage points more popular among the richest consumers than among the poorest, while Lana Turner differed only a few percentage points. Additional segmentation by city size seemed to matter, since substantial differences were found: Clark Gable was ten percentage points more

[109] Weaver (1946c).

Table 10.2 *Popularity and market segmented by income and age for three movie stars, US, 1940–1942*

			Income (dollars per week)				Male (age)			Female (age)			Cities (1,000s inh.)		
	Name	All	<25	25–35	35–60	>60	12–17	18–30	>30	12–17	18–30	>30	<10	10–100	>100
Popularity	Gable	50	57	49	52	51	43	53	43	54	55	56	65	58	54
	Stewart	42	34	42	43	45	36	41	38	41	44	43	46	45	40
	Turner	25	22	24	25	26	27	29	14	42	25	11	32	35	25
							Age (all)								
Market	Gable	100	34	20	32	14	18	41	41						
	Stewart	100	27	22	35	16	18	40	42		n.a.			n.a.	
	Turner	100	29	21	34	15	30	46	24						

Notes: Full star names: Clark Gable, James Stewart, Lana Turner.
Popularity refers to the percentage of respondents who named the star as a favourite. Market refers to the percentage of all responses for a star in a particular segment.
Source: Audience Research Inc.

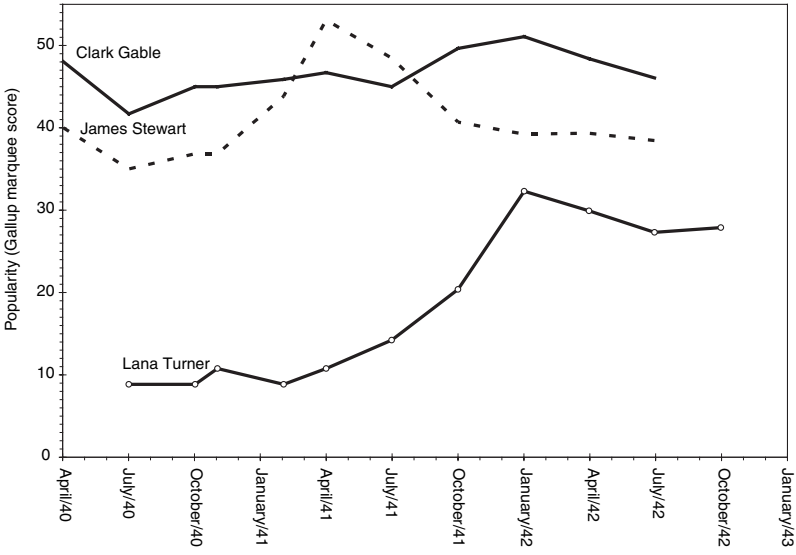

Figure 10.2 Popularity of Clark Gable, James Stewart and Lana Turner in the US, April 1940–October 1942
Source: Audience Research Inc.

popular in small cities than in large ones. Just as with Bernstein's questionnaires, the data showed considerable differences between popularity in a segment and the percentage of the star's market in that segment, because of differing cinema-going habits and segment sizes.[110] Of the richest consumers, for example, 51 per cent wanted to see a movie starring Gable, but altogether they constituted just 14 per cent of Gable's market, while the 57 per cent poorest Gable-fans constituted 34 per cent.

The method of measuring the star 'want-to-see' factor over short periods, as shown in figure 10.2, was new; previously polls were held roughly yearly. It foreshadowed how consumer goods companies would track brand-awareness. Star popularity fluctuated: Lana Turner was a rising star, Gable was consistently a top star, while Stewart's popularity was high but volatile.[111] The increases in Gable's popularity coincided with his releases, suggesting that while producers used Gable partly for the brand-awareness of his name, each use (film) subsequently increased

[110] Despite using interviews instead of questionnaires, and a list rather than open questioning.

[111] Kotler (1994: 522–5) distinguishes six different life-cycles for personalities: the standard path (going gradually to a steady peak), the sudden peak (e.g. Neil Armstrong), the come-back, the comet, the two phases, and the wave.

or maintained that awareness in what seems to have been a self-reinforcing process.

Audience Research applied the survey data to formulate specific policies for studios. After carefully examining the market for minor RKO actors, for example, it advised who to develop. 'On the basis of this experimental study we would nominate Dorothy Comingore, Ruth Warrick, Edmund O'Brien and Jack Briggs as most likely to become big ticket-sellers.'[112] It also advised that 'any star who makes fewer than three pictures a year is liable to do serious damage to his or her power to sell tickets'.[113] Similarly, Audience Research found that Myrna Loy and William Powell together would sell substantially more tickets than each separately, although most other combinations scored lower than their weakest constituent, 'a powerful argument against the indiscriminate piling up of high-priced talent in one picture'.[114] Further, Gallup personally observed that while 52 per cent of film consumers were under twenty-five, only about 20 per cent of RKO stars were. He advised: 'Perhaps it would be good business for RKO to concentrate on building up one or more personalities in this age group'.[115] Audience Research also researched whether consumers cared if a star was a communist: two-thirds did not.[116]

The question remains how Audience Research's clients used its advice. Since they were paying, they must have regarded the research as valuable. For RKO, market research was part of the new management's strategy after it emerged out of bankruptcy in 1939. The strategy certainly coincided with a successful period between 1942 and 1947.[117] Gallup's advice to choose between producing expensively for the lowest common denominator or cheaply for specific segments, was taken in full: while RKO turned out big-budget features aimed at a younger audience, it also created a unit producing low-cost films based on pre-tested titles, to be heavily promoted by theatre owners. The unit's first production, *Cat People*, a horror film, cost $80,000 and grossed over $1million. Other films were *I Walked with a Zombie*, *The Body Snatcher* and *The Curse of the Cat People*.[118]

[112] Audience Research Institute, 'RKO stock and contract players', Report(R)62, 26 March 1941.
[113] Audience Research Institute, 'How many pictures should a star make every year?', R142, 22 January 1942.
[114] Audience Research Institute, 'Marquee value of teams', R80, 28 May 1941.
[115] G. Gallup, 'Demand for stars under 25', R52, 24 February 1941.
[116] Audience Research Institute, 'Communism and Hollywood', R25, 10 September 1940.
[117] Haver (1977).
[118] *Ibid.*: 30; RKO ledgers state $147,000 and $525,000 as *Cat People*'s cost and worldwide rentals (Jewell 1978: 764).

Because there were so little reliable industry data on cinema-going habits, this was an important product of Audience Research. After Selznick had experienced the usefulness of research for pricing *Gone with the Wind*, he subsequently proposed to have Gallup poll the picture's best starting time.[119] His colleague Goldwyn asked Audience Research to measure interest in the double feature, to have ammunition for his campaign against it. A substantial minority, 43 per cent, preferred double features, making studio executives conclude that abolishing them would alienate this segment.[120] Another study queried New York cinema-goers about their television-watching habits, showing 70 per cent had seen at least one television programme.[121] Comparing statistics of RKO audiences to the population, Audience Research showed RKO that its audience was above industry average among the over-thirties, but below among younger consumers. RKO pictures were also liked above average among the richest consumers, and below among others. Similarly, RKO pictures performed averagely well in cities of over 500,000 inhabitants, but underperformed in smaller cities. Audience Research concluded: 'RKO pictures ... are least successful with the economic segments in which the greatest number of ticket-buyers are found'.[122]

Title tests constituted another important category that shaped the business decisions of Audience Research's customers. When Disney wanted to expand its audience to adults, it asked Audience Research to check which titles evoked memories of childhood. *Uncle Remus*, for example, was changed to *Song of the South*, a title more popular among adults.[123] Similarly, RKO found that *I'm Still Alive*, the title for an action-adventure, scored highly, but aroused unwanted associations: most respondents expected a farce or comedy.[124] When Selznick wanted to film *Jane Eyre*, Ogilvy reported that the title and concept tested lower than for any other film. Even a stellar cast – Ronald Colman and Joan Fontaine – increased the 'want-to-see' factor only marginally. The scene remembered most, the burning of Thornfield Hall, was only indirectly represented, and respondents even remembered scenes not in the novel.

[119] Selznick (1972).
[120] 'Goldwyn-Gallup survey reports 57% against duals, 43% in favor', *Motion Picture Herald*, 10 August 1940: 21; 'If 43% of pop. still want duals now's no time to end 'em', *Variety*, 14 August 1940: 5.
[121] Berg (1989: 432).
[122] Audience Research Institute, 'Publicity penetration', R122, 19 November 1941.
[123] Ohmer (1999: 71).
[124] Audience Research Institute, 'Titles for stunt man story', R17, 11 July 1940. Nevertheless RKO kept the title.

Despite this, Selznick went ahead, although he included the fire scene, which was not in the original screenplay.[125]

Yet another category of information, star-ratings, was also important to studio executives. Many subscribed to the *Continuing Audit of Marquee Values*, leading a journalist to observe:

> Many a player already knows the feeling of walking into a producer's office only to have him open that secret drawer, look down a column of figures and say 'Sorry, you're not the type.' It becomes quickly obvious then that when the doorbell ringer for some research outfit asked a few hundred Mrs. Doakeses, 'Would you go see a picture starring Maisie Glutz?' too many had said *'No'*.[126]

Greta Garbo had such an experience when attempting a come-back in 1947, after five years off-screen. Having already done wardrobe tests, she was set aside when producer Walter Wanger could not obtain finance on her name.[127] The new era of market research was also exemplified by Goldwyn in 1947: eight years earlier he had thrown out Merle Oberon after careful sales analysis, now he dumped Teresa Wright after examining her latest marquee ratings.[128]

Previews constituted another important product of Audience Research. Gallup was astonished how Selznick interpreted a preview graph: 'Selznick used to just put a ruler on this graph and then have his people cut out the valleys'.[129] The blunt approach showed with the preview of *The Paradine Case* in 1947, when Gallup's figures demonstrated that while support star Louis Jourdan excited movie-goers, his colleague Alida Valli did not. Selznick cut out as many of her appearances as possible.[130] His colleague Goldwyn also received unfavourable preview results for *Enchantment*: the audience found the film 'confusing' and 'slow-moving'. Goldwyn, however, boldly released the film unchanged, claiming its difference was its strength. It turned out otherwise.[131]

Finally, information on advertising effectiveness was an important product. Audience Research warned one client not to advertise a classical music score, although preview audiences liked it, because it would put people off. Likewise, the firm found sexual connotations counterproductive: most respondents said they had discovered that pictures advertised in that way did not live up to expectations. When a picture which was prominently advertised by female anatomy opened disastrously,

[125] Sconce (1994: 150–2).
[126] 'Audience Research Blues', *Variety*, 8 May 1946: 5, 25. *Variety*'s italics.
[127] Berg (1989: 431). [128] *Ibid.*: 444. [129] Simonet (1978).
[130] Gallup found the problem was the film's appeal to older consumers, who were infrequent cinema-goers (Leff 1987: 263).
[131] Berg (1989: 443).

Gallup advised the studio to use crime-themed advertisements instead.[132] Audience Research even previewed a picture that had already opened successfully, to help its client decide about additional advertising. It found an additional $75,000 expenditure would yield at least double in net revenue.[133] Another study concluded that 58 per cent of variation in popularity between pictures related to advertising outlays.[134] Gallup personally met with RKO executives to discuss advertising strategies. They asked him to develop a standard advertising procedure for all pictures. Gallup assured them that 'we are now in a position to draw conclusions which will enable you to increase the net effectiveness of your paid advertising by *at least one hundred per cent*.'[135] Audience Research found reviews influenced revenue only slightly, and that the 'want-to-see' factor could be increased most cheaply by using famous stars and stories.[136]

Discovery industrialised

Culver City, February 1946. *Spellbound* has opened successfully in the large cities. Yet Selznick has a problem: it underperforms in small-town markets. After tests, Audience Research concludes that the star-centred graphics of the advertisements are 'too sophisticated for towns under 50,000 in population'. The firm suggests advertisements telling the story. An obstinate Selznick, however, blames distributor United Artists' uninspired sales effort instead. But when Oklahoma reviewers call the film 'heavy psychological going' and 'another Alfred Hitchcock thriller with a lot of psychoanalytical stuff', market research wins over Selznick's emotions and he turns a potential disaster into an Oklahoma hit by advertising the story: 'WOMEN will be strangely moved, fascinated ... men will be intimately intrigued, thrilled ... by this bold woman who risks everything in one reckless experiment to unlock the fearful secret in the heart of a man ... a man suspected of murder!'[137]

The sophisticated way in which Selznick exploited knowledge about the consumer underlines how far market research had taken the film industry. Initially, the ways film companies built knowledge about the consumer resembled those of fashion goods industries. In half a century,

[132] Weaver (1946c). [133] *Ibid.*
[134] Audience Research Institute, 'Market Study', 27. Cf. Audience Research Institute, R78, 18 December 1941; R82, 22 January 1941.
[135] Audience Research Institute, 'Advertising', R100, 22 August 1941, AR's italics.
[136] Audience Research Institute, 'Market Study', 83–6: 'Review ratings and box office'; cf. Bakker (2001a: 493–8).
[137] Selznick's capitals. Leff (1987: 170).

however, changes in technology, contracts and costs caused market research to resemble that of mass-distribution industries. On the technological-cum-organisational level, the emergence of cinemas, film exchanges and eventually the carefully planned feature film, increased the incentives for conducting careful, scientific market research. The widening lag between production and release reduced the utility of sales analysis, the only proprietary source of useful market information. On the contractual level, the change from selling films to fixed-fee renting and then to percentage-based renting, combined with increasing vertical integration, further increased the profit incentive for market research.

By the late 1930s, therefore, the growing need for market information quickly made film companies adopt newly available research techniques. Granada and Audience Research were first movers. Granada held its surveys irregularly and analysed all responses to its printed questionnaires, which focused on cinema-going habits and stars' popularity. It did not aim to make profits with each individual question, but mainly wanted to obtain publicity, ammunition for industry campaigns and information useful for site purchase and film booking. Audience Research employed much more sophisticated methods. It polled frequently, using interviewers, scientific sampling and research design, and control data. It obtained information on advertising effectiveness, stars and titles, predicted box office revenue, and tested films' appeal in previews. It claimed it could respond to clients' questions in three days and aimed to supply information which directly translated into clients' profits.

The film industry was a pioneer in understanding the segmentation of its market. However, while fashion firms could focus on specific segments, film companies had to reach as wide an audience as possible. They analysed market segments to make sure films appealed across as many as possible, not to produce films aimed at specific segments. Only after the period examined here, when television made screen-time less scarce, could film companies afford to target specific segments, while television took over the focus on the lowest common denominator. By the 1950s, the emergence of a younger, more educated, affluent audience further changed the fragmenting market, while Hollywood's forced divesture of cinemas and the outsourcing of film production affected the incentive for market research. The subsequent decline of seven-year star-contracts diminished the value of star ratings. This fragmenting, unstable market probably made expensive nationwide representative sampling less cost effective. Specialised firms such as Audience Research and MPRB closed during the 1950s, but research was continued by general market research firms and inside the studios. Gallup's AIPO, for

example, was still working for Hollywood in the 1970s. By the 1960s, most Hollywood studios had a vice-president for market research.[138]

Today, techniques such as metered previews and statistical box office forecasting have become commonplace. Nearly all films are previewed, and every Sunday night Hollywood's computers are humming to predict final US box office revenues for the weekend's releases. Television adopted the ratings techniques pioneered by radio and film companies. Film studios also pioneered the continuous tracking of brand-awareness of their stars. Advertising agencies have been keen users of these methods. Young & Rubicam, of which Gallup was a vice-president, and Ogilvy & Mather, which Ogilvy set up after his work at Audience Research, have stretched the techniques to the limit. The surveys by Bernstein's Granada Theatres stood on the threshold of this era of modern market research; the work of Gallup's Audience Research marked its advent.

These modern market research techniques not only institutionalised the entrepreneurial discovery process, but at the same time standardised, automated and made tradeable the knowledge that entrepreneurs obtained about the market. It was a central element within the industrialisation, an element that came after entertainment itself had become automated, standardised and tradeable. By preventing some expensive flops and increasing the appeal of other films, modern market research helped companies to maximise the number of spectator-hours produced per unit of capital and labour, thus making a unique contribution to the productivity of spectator entertainment and its effect on the rest of the economy. The next chapter aims to assess and quantify this productivity effect and the concomitant growth impact.

[138] Simonet (1978).

11 At the origins of increased productivity growth in services

> The Industrial Revolution was not an episode with a beginning and an end ... It is still going on. Eric Hobsbawm

This book has aimed to show how, during the early twentieth century, motion pictures industrialised spectator entertainment. The question that remains unanswered is what impact they had on the rest of the economy. This is the topic of the current chapter. First, it will estimate the productivity growth and social savings generated by cinema, assesses its contribution to national economic and productivity growth and compares this to other industries. Second, the chapter will investigate more qualitatively to what extent motion pictures constituted the index case of the industrialisation of personal services, a foreshadowing of things to come in certain other high-sunk-costs services.

A quantitative assessment

To estimate the growth contribution of motion pictures, one first needs to identify the proper industry and market, and then an adequate output measure. This book has argued that film and live entertainment were part of one market, and that the former became an ever better substitute for the latter. Four pieces of evidence are consistent with this hypothesis. First, the sharp growth in numbers of actors and actresses stalled at the time when cinema emerged and output was growing rapidly. Second, between c.1905 and 1917, prices for film increased, while demand grew rapidly,[1] which suggests that it was used as a substitute.[2] Third, silent films were often interspersed with live entertainment or vice versa. In the late 1920s, the talkies automated away those live acts and thus constituted a major jump in substitutability.[3] Shortly before, Americans spent

[1] See, for example, Gomery (1992). [2] See Part I.

[3] On the talkies' disastrous effect on musicians' employment see Kraft (1994a, 1994b, 1996), and for Britain, Ehrlich (1986: 197–210). Ehrlich identified the cinema organ as an important pre-talkies labour-saving innovation.

$1.61 a year on theatre, vs. $3.41 on movies, while in 1940 the figures were $0.44 vs. $4.51 (and in 1945 $1.12 vs. $11.01).[4] The number of companies on tour and theatre-weeks produced on Broadway dropped sharply. Fourth, theatre historians often identify the increasing competition of film. Jack Poggi, for example, writes:

> First the movies created a new audience, many of whom had never been to the theatre; but the desertion of the galleries in theatres in all the large cities indicates that they also began to lure away that part of the theatre audience with the lowest income. Then, as the movies improved in quality and respectability, people from the business and professional classes might be expected to change their entertainment habits. ... Possibly the habitual New York theatergoers went to both theatre and films for a time and then gradually limited their attendance at live theatre to special occasions. This theory would explain why the less popular plays began closing more quickly, causing a drop in the number of theatre weeks.[5]
>
> ... the motion pictures could not have crushed the legitimate theatre if there had been a real preference for live drama. Theatre managers would never have turned their buildings over to the movies if they could have made more money by booking plays; a few might have been satisfied if there had been equal profit, or even a little less, in live theatre. Again we come back to the same point: people were simply not willing to pay the price necessary to maintain live theatre, except in the largest cities. If they could get what they wanted from the movies, why should they look elsewhere?[6]

In sum, motion pictures industrialised spectator entertainment in a two-stage process of creative destruction.[7] From the mid-1900s onwards, they automated away small-town live entertainment and from 1927 the talkies creatively destroyed most of the high-value-added metropolitan live entertainment.[8] One could argue that a Shakespeare play, an avant-garde theatre performance, or a big-time Broadway musical constituted rather imperfect substitutes for motion pictures. However, such comparisons use a final-year market definition that only included the live entertainment that survived, exactly because it differentiated itself away from cinema in a process of dynamic product differentiation so characteristic of the media industry.[9] Live entertainment became either heavily subsidised or a commercial metropolitan premium product. For the purpose of this chapter, therefore, cinema and live entertainment are best treated as one market.

Another key issue is output measurement. Often employment or capital is used to proxy output in services, but this inevitably leads to observing limited total factor productivity (TFP) growth, because these

[4] United States Department of Commerce (1975). [5] Poggi (1968: 79). [6] *Ibid.*: 43.
[7] Schumpeter (2004). [8] See Chapter 2, figure 2.3. [9] See Chapter 2.

are inputs.[10] Instead, this chapter uses the 'spectator-hour', borrowed from the airline industry. The seats in a venue times the performance duration constitute the number of spectator-hours produced, the proportion filled, the hours actually sold, the proportion empty, the amount perished.[11]

This ignores potential changes in a spectator-hour's quality, which would be difficult to measure. Given the massive increase in production expenditures and the many new product characteristics – such as cinema itself, the feature film, talking pictures, air-conditioned venues – quality change was probably positive.[12] Gary Becker (1965) has shown that an increase in wages will decrease the consumption of time-intensive activities. In theory, quality could be proportionate to a spectator-hour's marginal opportunity cost and inversely proportionate to marginal availability of leisure time. Between 1900 and 1938, opportunity costs (real hourly wages) increased by 2.17 per cent per annum and the 'exchange rate' (the spectator-hour as percentage of available leisure time) decreased by 1.22 per cent per year.[13] This would suggest a net average minimum quality increase of a spectator-hour of 0.95 per cent per year was needed to keep drawing consumers into venues. Given the measurement difficulties and the assumptions that have to be made, quality change is ignored here. This will likely make the estimates below more conservative.

The growth in total factor productivity (TFP)

Two detailed benchmark estimates for productivity in the industry have been made for 1900 and for 1938. Because these are based on data that

[10] Millward (1990). See also Broadberry and Ghosal (2002) and Broadberry (2006), which highlight the difficulty of measuring output in services. The TFP figures below, however, support Millward's idea that for services capital growth may be a better output proxy than labour growth. Nevertheless, it is still far from perfect, and real, more accurate output measures are needed.

[11] The spectator-hour emerged partly out of Philip Scranton's advice to look at commonalities between the film and transport industries, and from Nordhaus's (1997) notion that goods themselves do not really matter, but more the services they provide. To estimate how much the consumer price index has underestimated the decrease of the price for lighting (several thousand times), covering the period from c. 2500 BC until the present, Nordhaus focuses on the services the product provides, measured in lumens, not on the lighting device's price.

[12] Although the lack of audience interaction and recorded sound (until 1927) could be considered inferior characteristics. Until talking pictures, however, both were provided by live entertainers synchronous with and in between pictures. See Chapter 2.

[13] In 1900 the opportunity cost of one spectator-hour was 19 cents (the average hourly wage) and 3.9% of weekly leisure time ((144 hours)/2-average working hours). In 1938 this cost was 43 cents and 2.5% of leisure time. See Chapter 3.

were not always perfect, the calculated growth rates give no more than an indication.[14] Between the two years, output grew substantially: in the US by 9% per annum, in Britain by 3% and in France by 6%. These rates meant that, by 1938, the American industry was twenty-eight times its previous size and the British and the French ones three times and nine times, respectively.[15]

The growth in revenues was far less because rapid productivity growth made prices fall sharply. In America in 1900, for example, on average one hour of labour was needed to produce one spectator-hour. By 1938 this had decreased to about 3.5 minutes. Corrected for changes in average education, output per hour worked increased a massive twelve times in the US, almost doubled in Britain, and quintupled in France (table 11.1).

Part of this phenomenal growth was enabled by adding more capital, such as cameras and projectors, studios, cinema buildings or film production outlays. In all three countries, the amount of capital per unit of labour doubled. Most of the growth, however, was caused by an increase in 'efficiency', total factor productivity. This varied from just over 1 per cent a year in Britain to 4 per cent in France and about 6 per cent in the US.

For the US case, for which we also have productivity data for live entertainment, it is clear that productivity in live entertainment also increased, at about 0.7 per cent a year, far less than that of filmed entertainment, but higher than TFP-growth for the entire British entertainment industry (table 11.2). Part of the productivity growth can be explained by agglomeration effects: increased urbanisation that made service delivery easier and thus allowed a higher output with fewer inputs. For the US, it has been calculated that hypothetical two- to three-dimensional agglomeration effects can explain nearly all of the productivity growth in live entertainment.[16]

Between 1900 and 1938, the markup for spectator entertainment decreased significantly, indicating a substantial competitive effect of motion pictures on the spectator entertainment industry, and real cinema wages grew possibly twice as fast as the national average, suggesting that labour inputs were able to capture some of the Schumpeterian profits from the new technology. Thus, a sharp rise in dynamic efficiency (TFP-growth through innovations) was accompanied by an increase in allocative efficiency (declining price–cost margins), avoiding – at least in

[14] For the details see Bakker (2004a) and Bakker (2007b).
[15] See also the comparative expenditure (Chapters 3 and 4). [16] Bakker (2007b).

Table 11.1 *TFP-growth in the entertainment industry in the US, Britain and France, 1900–1938*

	Total			Index		
	US	Britain	France	US	Britain	France
Annual growth 1900–1938 (%)						
Output	9.19	3.22	5.92	100	35	64
Capital	5.04	3.39	3.33	100	67	66
Labour	2.98	1.65	1.45	100	55	49
Growth due to above inputs	3.49	2.09	1.92	100	60	55
TFP	5.70	1.13	4.00	100	20	70
TFP/output growth	0.62	0.35	0.68	100	56	110
Capital productivity	3.95	−0.16	2.51	100	−4	63
Labour productivity	6.03	1.54	4.41	100	26	73
Capital/labour ratio	2.00	1.71	1.85	100	85	93
Output/hour worked (s-h)						
1900	0.14	0.84	0.10	100	610	72
1938	1.69	1.50	0.51	100	89	30

Notes: all amounts at 1938 prices; a one per cent growth in capital is assumed to increase output by 0.25 per cent; a one per cent growth in labour to increase output by 0.75 per cent. Labour is corrected for changes in its quality. Sports expenditure data has been disaggregated from UK 1938 data to make it comparable (see Bakker 2007a: 104).
Sources: Bakker (2004a), with corrections for decrease in working hours and other minor corrections.

Table 11.2 *TFP-growth in the US spectator entertainment industry, 1900–1938, in per cent per annum*

	Total	Disaggregated	
		Live technology	Film technology
Output	9.19	−1.24	12.86
Capital	5.04	−0.53	
Labour	2.98	−2.40	
Growth due to above inputs	3.49	−1.93	5.40
TFP	5.70	0.69	7.46
Capital productivity	3.95	−0.71	
Labour productivity	6.03	1.18	
Capital/labour ratio	2.00	1.91	

Note: live findings are sensitive to small estimation errors.
Source: Bakker (2007b).

the long run – a Schumpeterian trade-off. Disaggregated markup effects suggest a 29 per cent decline for US live entertainment, and a 5 per cent decrease for film. Even the film industry may not have been able to capture the rents of its innovations.[17]

In Britain, TFP-growth was about a fifth of US TFP-growth, possibly because in 1900 productivity was already much higher, leaving less room for further improvements. This is also reflected by the rise in prices of 3 per cent over the whole period, compared to a 50 per cent fall in the US.

In France, TFP-growth was about two-thirds of US growth and three times British growth. French prices declined by 82 per cent. The most obvious explanation is low productivity levels in France in 1900. The extreme difference and subsequent convergence may be the result of market integration. Furthermore, the French data are the least reliable of the three countries.[18] The contemporary trade press noted the low levels of French entertainment consumption relative to Britain, and France was also far less urbanised. This meant that many unrealised economies of scale may still have existed, for example, larger theatre/cinema buildings made possible by increasing urbanisation and entertainment expenditure, and more efficient cinema circuits. Moreover, the sharp price decrease suggests that, initially, entertainment was largely a luxury, to some extent confined to the Paris region and the major cities. Motion pictures quickly pushed prices down and brought entertainment to far-out areas.

Market integration

This book has argued that motion pictures integrated national entertainment markets. We would therefore expect less variation in prices and productivity across countries in 1938 relative to 1900. Because initially entertainment was not internationally traded the relative price may not be well represented by exchange rates. Over time, however, tradeable intermediate products (rolls of exposed celluloid protected by copyright) and local delivery facilities became increasingly important. One would therefore expect that initially prices varied widely, but that they converged over time.

At exchange rates, prices are considerably closer to each other in 1938 than in 1900. Purchasing power parity (PPP) is used to obtain more appropriate price ratios. If one spectator-hour, for example, costs $1 in

[17] Bakker (2007b), following Crafts and Mills (2005). The markup figures are sensitive to small estimation errors.
[18] See Bakker (2004a: appendix).

the US and £0.16 in Britain, then the appropriate price ratio would be \$1 = £0.16.[19] The degree to which the PPP price ratio differs from the exchange rate could partially reflect the degree to which the service was tradeable and internationally competitive rather than location-bound (table 11.3).[20]

In 1900, the differences were indeed enormous. At US prices, the price of British entertainment was over four times as high as one would expect from the exchange rates, while French entertainment was only a tenth of what one would expect. By 1938, prices still differed substantially, but had converged closer to exchange rates. The range of difference narrowed from 38 times (12–462) in 1900 to 1.26 times (100–126) in 1938, at PPP at US prices. Although one can quibble over the price estimates, it is not expected that further precision, if at all possible, would fundamentally change these findings: the price convergence to exchange rates clearly suggests international market integration at work.[21]

Because cinema used tradeable intermediate products, it is expected that 1938 cinema prices would be closer to exchange rates than live entertainment prices. Table 11.3 shows that, indeed, the former ranged between 100 and 134 and the latter between 100 and 392, substantial further evidence for the existence of market integration. Even though live entertainment itself did not become tradeable, its prices also came much closer to exchange rates, narrowing from 38 times (462–12) in 1900 to 4 times (392–100) in 1938. This suggests that cinema put competitive pressure on live entertainment, and, being internationally traded, the effect was in the same direction across countries.

Another noteworthy feature is that labour productivity in entertainment varied less across countries in the late 1930s than it did in 1900. Part of the reason was probably that cinema technology made entertainment partially tradeable and therefore forced productivity in similar directions in all countries. The tradeable part of the entertainment industry would exert competitive pressure on the non-tradeable part.[22] It is therefore not surprising that cinema caused the lowest efficiency increase in Britain, which already had a well-developed and competitive entertainment industry, with a high labour and capital productivity both in 1900 and in 1938, and higher efficiency increases in the US and to a lesser extent in France, which both had less well-developed entertainment industries in 1900.

[19] Following Broadberry (1997: 19–22). [20] Bakker (2004a).
[21] *Ibid.*: appendix; Bakker (2007b). [22] *Ibid.*

Table 11.3 *Entertainment prices at PPP ratios and exchange rates, US, Britain and France, 1900 and 1938*

Year		US Prices			British prices			French prices			Range max/min
		US	Britain	France	US	Britain	France	US	Britain	France	
Price (in 1938 currencies per spectator-hour)											
1900	Entertainment	0.358	0.016	15.740	0.358	0.016	15.740	0.358	0.016	15.740	
1938	Entertainment	0.104	0.017	2.860	0.104	0.017	2.860	0.104	0.017	2.860	
1938	Film	0.084	0.015	2.180	0.084	0.015	2.180	0.084	0.015	2.180	
1938	Live	0.394	0.020	8.890	0.394	0.020	8.890	0.394	0.020	8.890	
PPP entertainment and exchange rates											
1900	Entertainment	1.000	0.046	43.970	21.978	1.000	966.374	0.023	0.001	1.000	
1900	Exchange rates	1.000	0.210	5.184	4.762	1.000	24.686	0.193	0.041	1.000	
1938	Entertainment	1.000	0.164	27.500	6.116	1.000	168.196	0.036	0.006	1.000	
1938	Film	1.000	0.179	25.950	5.587	1.000	144.972	0.039	0.007	1.000	
1938	Live	1.000	0.051	22.560	19.608	1.000	442.353	0.044	0.002	1.000	
1938	Exchange rates	1.000	0.200	34.750	5.000	1.000	173.750	0.029	0.006	1.000	
Divergence exchange rate/PPP											
1900	Entertainment	100	462	12	22	100	3	848	3915	100	39.15
1938	Entertainment	100	122	126	82	100	103	79	97	100	1.26
1938	Film	100	112	134	90	100	120	75	83	100	1.34
1938	Live	100	392	154	26	100	39	65	255	100	3.92

Sources: entertainment prices: Bakker (2004a); exchange rates: Board of Governors of the Federal Reserve System 1943.

Causes of growth

The productivity growth in the entertainment industry could have been caused by several factors.[23] First of all, technical progress in itself, of course, decreased the amount of labour and capital per unit of output, resulting in TFP-growth. It is also possible that the improvements in the quality of labour – such as increased experience, training, formal education, improved health – have been underestimated in the above TFP-calculation, and that the ageing of the film industry resulted in substantially higher levels of human capital.

Changes in the industry structure were also an important factor: the entertainment industry became an industry with a modern sector – cinema – and a traditional sector – live entertainment – and part of productivity growth and TFP-growth can be explained by the transfer of labour and capital between the two. This was the major way in which technical progress took place. In the film industry technical progress only partially found its expression in physical capital, and for a large part in other ways, such as a change in the organisation of production,[24] with most content production done centrally in large studio complexes rather than by routing creative inputs through theatre circuits.

Changes in the utilisation rate of capital could also account for increased productivity and TFP-growth. This probably took place on a massive scale: before film, entertainment venues were dependent on human creative inputs travelling to their venues, which did not make operation profitable at marginal times of days, weeks or years and in marginal places. When these inputs were replaced by exposed celluloid, entertainment venues could also operate at certain marginal times and in marginal places. The utilisation rate of creative inputs – human capital one could say – increased massively, because they could be in many places at the same time.[25] Within the production of entertainment content, the utilisation rate also increased substantially. While theatre scenery needed to be replicated for duplicate companies to travel the provinces, and while theatre sets, stage equipment, stage lighting, etc., was only used part of the day (mainly evenings), film scenery and apparatus was used a larger amount of hours of each day, and often around the clock. The large Hollywood studios, for example, maximised their capital utilisation rate by using their night-time studio capacity to shoot B-movies. Although these yielded far less revenue than other films, their costs were literally marginal.[26]

[23] The factors below follow Feinstein (1981). [24] *Ibid.* [25] Bakker (2003c); Chapter 5.
[26] The estimation could, of course, contain several errors, such as conceptual errors, errors of measurement and errors of specification. See Bakker (2004a: 29–31).

The social savings

Another way to measure the contribution of film technology to the economy in the late 1930s is by using a social savings methodology.[27] If we assume that cinema did not exist and all demand for entertainment (measured in spectator-hours) would have to be met by the next best alternative, live entertainment, we can calculate the extra costs to society and thus the amount saved by film technology. Since this is a rather simple price counterfactual, and changes in costs and supply functions are ignored, the social savings exercise is rather innocent of the rearrangement of productive activities as entertainment costs change, and of imperfect competition in the entertainment sector. The calculations therefore, must be seen as no more than a rough-and-ready approximation.

In the US, the social savings amounted to as much as 2.3% ($2.5 billion) of GDP, in France to just 1.4% ($0.16 billion) and in Britain to only 0.3% ($0.07 billion) of GDP.[28] A critic could argue that in the absence of cinema, live entertainment would have developed in another way and could also have increased productivity by non-cinema technological improvement, such as larger venues or fast rotation of creative inputs by plane. Around 1900, however, live entertainment had already realised this productivity gain: venue scales were larger then they had ever been before, the fastest trains and other means of transportation were used to move the top creative inputs around, booking systems were as efficient as possible.[29] In Britain in the late nineteenth century, each Sunday over a hundred trains were driving across Britain transporting entertainers to their next venue.[30] Cinema emerged only because live entertainment technology had reached its final productivity possibility frontier, and further process innovation yielded sharply diminishing returns. Only a radical product innovation could set the industry on a new path towards newly increasing productivity growth, replicating the success of the nineteenth century and pushing productivity to even greater heights.

Consumer surplus

A third and different way to look at the contribution of film technology to the economy is to look at the consumer surplus it generated. Contrary to the TFP and social savings techniques used above, which assume that

[27] Fogel (1964).
[28] The social savings should equal the accumulated intensive growth contribution calculated above. That contribution expresses how many fewer inputs each year are needed to produce the same outputs (Crafts 2004).
[29] Bakker (2003c). [30] Sanderson (1984). See also Chapters 2 and 5.

Table 11.4 *The performance of the entertainment industry, 1900–1938*

	US	UK	France
TFP-growth			
Entertainment industry	5.70	1.13	4.00
National TFP-growth	1.14	0.63	1.20
Social savings			
In million dollars at exchange rates	1,913	85	163
Share of 1938 GDP (%)	2.30	0.32	1.37
Per capita			
In spectator-hours	144	21	47
In dollars at exchange rates	14.74	1.79	3.97
Consumer surplus			
In million dollars at exchange rates	164	207	51
Share of 1938 GDP (%)	0.20	0.78	0.43
Per capita			
In spectator-hours	12	52	15
In dollars at exchange rates	1.26	4.35	1.25

Note: social savings at zero price elasticity.
Source: Bakker (2004a) with corrections for working hours; Bakker (2007b).

cinema was a substitute for live entertainment, this approach assumes that cinema was a wholly new good; the entire consumer surplus generated by it was 'new' and would not have existed without cinema. For an individual consumer, the surplus was the difference between what he or she was willing to pay and what he or she actually paid. This difference varies from consumer to consumer, but with econometric techniques, one can estimate the sum of individual surpluses for an entire country. The resulting national consumer surpluses for entertainment varied from about a fifth of total entertainment expenditure in the US, to about half in Britain and as much as three-quarters in France.[31]

Comparison of the findings

Table 11.4 lists the main findings in per capita terms. It is striking that the country with the slowest TFP-growth, Britain, generated the highest consumer surplus, and also that the US, while having high social savings, had just a modest consumer surplus, only 19 per cent of expenditure. Possibly in the US cinema was primarily a substitute for live entertainment, automating away most live entertainment, and thus yielding large social savings, while in Europe film was less of a substitute, as there were

[31] These are extremely tentative estimates (Bakker 2004a).

competitive live entertainment industries, and consumers preferred live entertainment in their own language and culture when cinema screens showed largely foreign entertainment (contributing to the newness of the product in Europe). Cinema may have had both a 'substitute-character' and a 'newness-character'; the mix probably varied across countries.

The large differences between social savings and consumer surplus could also indicate imperfect competition and a rather large producers' surplus, and thus a rather steep supply curve, consistent with large-scale effects, especially in film production. Since films are sunk costs, and venue capacities are fixed, a fall in price will not lead to a sharp fall in the number of spectator-hours offered, in the short run. Large-scale effects might have given firms a larger producer's surplus. Because Britain had a relatively smaller film industry and larger live entertainment industry, smaller 'scale effects' may have existed, and therefore British companies enjoyed a smaller producers' surplus and British consumers a larger consumer surplus.

The entertainment industry can be placed within the debate on differences in manufacturing productivity between Europe and the United States. Stephen Broadberry, for example, writes that in British manufacturing, skilled labour was relatively abundant, reducing the need for automation, and resulting in focus on crafts-based production and shop-floor management. Further, the British market was so small and stratified by class differences, that often the optimum scale for automation could not be reached inside the home market, while manufacturers also faced differentiated European export markets.[32] In the US, on the other hand, there was a shortage of skilled labour, which caused manufacturers to focus heavily on research and development and on automation, and to employ professional managers. The findings for the entertainment industry yield a similar picture, with relatively abundant and cheap creative inputs in Europe, which enabled the live entertainment industry to remain competitive and a large, relatively homogeneous market as well as a shortage of creative inputs in America. Consequently, the US focused on increasing R&D outlays and on automation through motion pictures, more so than the European entertainment industry. This is reflected in the considerably higher numbers of actors per 100,000 inhabitants in Britain and France compared to the US, even though the latter was a large net exporter of motion pictures and of rights to live entertainment productions.[33] Through professional management, R&D outlays and automation, the US industry made up for its shortage of creative inputs.

[32] Broadberry (1997); see also Broadberry (2006). [33] See Chapter 2.

Film was a product that might have been closely related to the degree of industrialisation.[34] It may not have been a coincidence that it was precisely in the highly industrialised societies of the US and Britain that the consumption of cinema was so high so early.[35] France may have lagged behind in industrialisation, with possibly less demand for spectator entertainment, and possibly also a live entertainment industry that was more competitive because of lower wages.[36] This may also explain the boom in French entertainment expenditure after World War II. By that time, French urbanisation levels had also come closer to those of the US and Britain.

The impact and significance of the film industry

Spectator entertainment did have a not insignificant impact on growth. In the US it was responsible for one-fiftieth of GDP-growth between 1900 and 1938, and for one-thirtieth of national TFP-growth. In Britain, it caused about 1.4% of GDP-growth and 3.5% of national TFP-growth. The respective figures for France are 1.3% and 0.8%. In all countries, TFP-growth was at least one-and-a-half times the increase in efficiency at the level of the entire nation. For the US it was as much as five times and for France it was more than three times the national increase in efficiency.[37]

Since cinema was a new technology that industrialised entertainment – just as, for example, steam power industrialised the textile industry – it might be worthwhile to compare it with new industries during the British industrial revolution. Entertainment's American GDP share (c. 0.7%) was about a seventh of that of both the cotton industry and the canals and railways between 1780 and 1860 and was similar to the iron industry's GDP share in 1800.[38] Entertainment's TFP-growth was several times higher than that for cotton (2.6% annually), iron (0.9%), canals and railways (1.3%) and shipping (2.3%).

High TFP-growth has been associated with the adoption of general purpose technologies (GPTs), 'a technology that initially has much scope for improvement and eventually comes to be widely used, to have

[34] In Britain, between c. 1850 and 1920 industrialised regions had the highest number of actors per capita (Sanderson 1984).

[35] Possibly the higher British live entertainment production was caused by earlier industrialisation. Demand increased sharply when only live entertainment technology existed, thus creating an established live entertainment industry, while the US experienced the highest growth in demand when cinema technology already existed.

[36] For a comparative overview of productivity in services in France and Britain in this period see Dormois (1998).

[37] Bakker (2004a).

[38] Though it rose to 3 per cent by 1860 (McCloskey 1981).

many uses, and to have many Hicksian and technological complementarities'.[39] An observed characteristic is that a GPT's initial impact on productivity growth is typically minimal, and that it may take between 40 and 120 years to have a substantial productivity impact.[40] Film technology possessed some GPT-properties: it had much scope for improvement, was improved in steps and became widely used both nationally and internationally: almost every town had at least one cinema. Also, cinema had its largest productivity impact only after thirty to forty years, with the introduction of talking pictures from 1927. The uses of film technology, however, as well as complementarities, remained largely constrained to spectator entertainment, and this limited cinema's growth impact compared to GPTs and made it different.

Nonetheless, comparing cinema's growth impact with that of GPTs gives some insight into its significance (table 11.5). Entertainment's US GDP share, for example, was lower than that of GPTs, except early British steamships. Yet entertainment's TFP-growth was nearly twice that of most GPTs and several times that of many. This is reflected in the high share of the intensive growth contribution. Few other industries experienced growth so intensively. Only fin-de-siècle British railways came close. Nevertheless, because of its small size, the total growth contribution of film technology is smaller than that of GPTs.[41]

Cinema's social savings were often higher than those reported for GPTs or derived from GPTs' TFP-growth. In the US, they were below those of Information and Communication Technologies (ICT), roughly equal to those of railways and higher than those of British steam (table 11.5). The high social savings were possible because the extreme intensity of growth compensated for the small expenditure share. Without the sharp drop in prices resulting from the efficiency increase, this share might have been far higher. The time cost of entertainment, given the 24-hour day, constrained the effect of falling prices.

To gain insight into an industry's growth impact social savings are expressed as a fraction of national social savings generated over the same period. National US social savings amounted to 37 per cent of GDP in 1938. To produce the same output using only technologies available in 1900, the US would have needed additional inputs to the value of over a third of actual GDP.[42] Motion pictures accounted for 5.4 per cent of

[39] Crafts (2003) quoting Lipsey, Bekar and Carlaw (1998: 15–54). [40] *Ibid.*
[41] See also Bakker (2007b).
[42] The approach here is rather simplified and assumes that social savings generated away from the country of production, through imports and exports, cancel each other out. It also is largely innocent of Domar-weighted inter-industry effects through intermediate inputs, which could be substantial.

Table 11.5 *The growth contribution of cinema technology and that of general purpose technologies (GPTs) at various intervals, 1850–2000*

				GDP-	Growth of		Growth contribution			Social savings			National growth	
		Interval	Lag (years)	share (%)	TFP (%)	K/L (%)	Int. (%)	Ext. (%)	Total (%-point)	Industry (% GDP)	(%NSS)	National (% GDP)	TFP (%)	GDP (%)
Cinema	US	1900–1938	25–40	0.7	5.7	2.0	91	9	0.04	2.3	5.4	36.8	1.14	2.41
	UK	1900–1938	25–40	1.2	1.1	1.7	76	24	0.02	0.3	1.4	21.6	0.63	1.26
	FR	1900–1938	25–40	0.2	4.0	1.9	92	8	0.01	1.4	3.5	38.2	1.20	1.25
Railways	US	1840–1890								1.5	10.0	15.0	0.34	4.76
	UK	1830–1850		1.0	1.9	22.8	13	88	0.16	0.4	2.9	13.7	0.75	1.88
	UK	1850–1870		4.0	3.5	5.9	54	46	0.26	2.6	19.0	13.7	0.75	2.39
		1870–1910		6.0	1.0	0.4	86	14	0.07	2.3	11.8	19.7	0.56	1.70
Steam	UK	1850–1870	80	1.8	3.5		50	50	0.12	1.2	8.8	13.7	0.75	2.39
		1870–1910	80–120	2.7	1.7		64	36	0.14	1.8	9.1	19.7	0.56	1.70
Steamships	UK	1850–1870		0.7	1.6	9.7	33	67	0.03	0.2	1.6	13.7	0.75	2.39
		1870–1910		3.4	1.6	4.5	50	50	0.10	2.1	10.7	19.7	0.56	1.70
Electricity	US	1929–1948	40		4.6									
ICT	US	1974–1990		1.4			40	60	0.68	4.1	69.8	5.9	0.39	3.17
		1991–1995		1.9			47	53	0.87	1.6	60.5	2.6	0.68	3.13
		1996–2001		2.5			43	57	1.79	3.7	93.2	3.9	0.83	3.50

Notes: Lag = rough estimate of time between innovation and productivity impact. Int. = intensive. Ext. = extensive. %NSS = industry social savings as percentage of total national social savings. TFP, K/L and GDP growth rates are in per cent per annum.
Social savings are those in final year as percentage of final year GDP. Social savings for UK railways 1870–1910, UK steamships 1850–1910 and US ICT 1974–2001, as well as national social savings have been calculated from the intensive growth contribution and real GDP-growth using equation (19) from Bakker (2007b). GDP-share of steam has been calculated by doing the obverse.
ICT = Information and Communication Technologies.
Sources: US Railways: Fogel (1962: 196) (multiplied by 1.5 to include passenger social savings). UK Railways: Crafts (2004), quoting Hawke (1970). Steam and steamships: Crafts (2004). US electricity data is the geometric average of 1919–1929–1941–1948 growth intervals from Kendrick (1961), as reported in Field (2003). ICT: Crafts (2004).
National TFP-growth for US 1900–1938 from Maddison (1995), for the UK from Crafts (2003). US 1974–2001 is a rough estimate at 2/3 of the non-farm business sector TFP reported in Crafts (2003).
National US and UK GDP-growth from EH.net.

national social savings.[43] Social savings were lower than those of GPTs, except for early British steam, because of entertainment's low GDP share and the high national social savings during the period. If the latter were the average of the national social savings during the emergence of other GPTs, entertainment would have accounted for 11.1 per cent of social savings, higher than many GPTs. If entertainment's GDP share were equal to the GPT average, it would have accounted for 17.1 per cent of social savings. If both were changed, entertainment would account for 25.2 per cent of national social savings, lower only than ICT in the late twentieth century.[44]

A new technology's share in national social savings can potentially quantify the extent to which it is a GPT. This growth impact assessment takes account of both intensive growth and industry size and scales this to economy-wide efficiency gains. Given the latter's size during the late twentieth century, the threshold for becoming a GPT may have moved upwards over time.

If the intensive growth contribution of other service industries has also been underestimated, these findings suggest that national US TFP-growth may actually have been higher than previously estimated. Cinema's extraordinary TFP-growth may be related to it being more of a Narrow Purpose Technology (NPT) than a GPT. Other NPTs, especially those connected to service industries, may sometimes show a similarly high TFP-growth, if output is properly measured. Technologically, NPTs inherently may have enabled larger efficiency growth because the innovations could be tailored to one industry, while makers of GPTs had to keep them generally employable, aimed at the lowest common denominator to an extent that depended on customisation costs relative to profit margins. Financially, the competition for capital investment posed by GPTs may have resulted in NPTs needing at least a comparable expected return on investment. Thus by definition NPTs would need to have larger TFP-growth than GPTs to attract entrepreneurial investment.[45] Motion pictures notably were the tenth most profitable

[43] As TFP-growth of motion pictures, and possibly many other services, is not fully included in national TFP-growth rates, US 1938 social savings were probably substantially higher. For this reason motion picture social savings were added to 1938 national social savings, and then divided by them, to arrive at its share of 6.0 per cent. If the social savings of other under-examined services were added, motion picture's share would decrease, but the aggregate services share would increase.

[44] The effect of national social savings is 28% of the total effect, that of GDP share, 59%, and the joint effect is 13%.

[45] If profits depend on efficiency gains that are not fully or not immediately imputed into prices.

industry in the US in the 1930s[46] and had been developed by capital provided by the stock market and by investment banks such as Goldman Sachs, J. P. Morgan and entrepreneurial families such as the DuPont and Loew families, who certainly faced GPTs as alternative investment options.[47]

So far, this chapter has given the industrialisation of entertainment a happy ending. It has predominantly told a success story of a new technology that industrialised entertainment and generated substantial social savings. However, one could wonder if the satisfaction of consumers had increased to a similar degree. Sue Bowden and Avner Offer argue that consumers generally discount time hyperbolically when they consume goods: they prefer instant gratification or satisfaction over larger satisfaction at a later date.[48] For example, going to the cinema or listening to a record gives instant satisfaction, while another activity, such as learning to play an instrument, may not give that instant satisfaction, but may give a proportionally larger satisfaction over a long period of time.

In this vein, one could say that consumers went to the cinema more often because it simply gave them instant satisfaction, while the activities that they did not do while watching movies – such as training for a sport, telling stories, singing, reading a literary novel – might have given them a higher satisfaction over time. One could then argue that the social savings were not as great as they seem, but that consumer satisfaction, although difficult to measure, was less than it would have been in a world where people were doing those other activities instead of consuming entertainment. Since many of these alternatives required less money per hour of enjoyment than spectator-entertainment, the social savings of the film industry would have been far smaller than the amount arrived at above.

Such a theory, however, although it raises essential questions about consumption in general, would not significantly change the findings of this chapter. First, the amount of satisfaction would be hard to measure in economic terms. One could argue that the hyperbolic discount of time was a deliberate consumer preference, and that a consumer simply would choose instant satisfaction if the amount of satisfaction was larger than the net present value of satisfaction of an activity that would give a larger satisfaction over time, at the discount rate of time of the individual consumer.

Secondly, those other activities that gave larger satisfaction over time seem to have come out of the book of social reformers and progressive

[46] Huettig (1944). [47] See Chapter 6. [48] Bowden and Offer (1994).

liberals, such as the members of the Economic Club in Britain in the 1890s and those connected to the *Economic Journal* at that time. The question is whether the consumer of large amounts of spectator entertainment really would have learned to play an instrument, joined a sports club, attended a public-speaking course, or read a literary novel if spectator entertainment had not been available. The consumer might just as well have gone drinking more, had more sex, smoked opium or injected heroin in his veins, all of which might have given a higher instant gratification than going to cinema or music hall, and might have cost more money per hour of enjoyment than cinema.[49] In that case, this chapter would have substantially underestimated the social savings of the film industry. A. J. P. Taylor, who apparently adheres to this second way of thinking about cinema, aptly remarks: 'The cinema was the greatest educative force of the early twentieth century. Yet highly educated people saw in it only vulgarity and the end of old England.'[50]

Despite all these considerations, the hyperbolic discount of time probably did not matter that much, since this chapter has assumed spectator entertainment as one industry. If filmed entertainment had not existed, people would have consumed live entertainment instead, which appears to have been discounted similarly.

The industrialisation of services

The previous section concluded that whatever happened within spectator entertainment, it did have a significant economic impact. The industrialisation process itself in between the two benchmark years, however, which involved several one-off, qualitative changes, was treated as a black box. The present section looks inside this box. It identifies the key elements of the industrialisation process, and assesses to what extent they can be generalised to other services. This attempt at extension is necessarily somewhat speculative, as this book is not the right place to test emerging hypotheses on the history of other industries to the fullest extent possible.

Seven elements of structural change drove the 'industrialisation of services': strong market growth; a shift from process to product innovations; the industrialisation process in a narrow sense (automation, standardisation and tradeability); the shift to high sunk costs; the dominance of quasi-unique organisations; the international diffusion of

[49] The happenings during and (nine months) after the notorious power cut in New York City in the late 1970s, which deprived people of television for several days, lend more support to this latter type of consumer than to the progressive role model.

[50] Taylor (1976: 181).

innovations; and underlying external factors.[51] These will be discussed in turn.

Market growth

During industrialisation the effective market for entertainment grew rapidly. An exogenous cause of this was the liberalisation that allowed the services to be provided unrestrictedly. Endogenous factors further increased the effective market size: decreasing prices, increasing perceived quality, novel quality aspects, and changes in consumer demand led to substitution of other expenditures towards entertainment.[52] Tradeability increased the market even more, by integrating previously isolated markets, and this increased the sunk expenditures companies were willing to undertake.

Strong market growth was also important for the industrialisation of other services. Liberalisation often set it in motion, while the endogenous factors established a self-reinforcing growth process. One thinks, for example, of the rapid growth of expenditure on health care and medicines since 1850 and the eventual importance of large pharmaceutical companies producing tradeable intermediate products that industrialised part of the medical function.[53] Another example might be telecommunication services, with wires and radio transmission automating away an ever larger part of the traditional hand delivery.

The shift from process to product innovations

We have seen how decreasing returns to process innovations in live entertainment eventually led to the adoption of motion pictures as a radical new product innovation, that also had some characteristics of process, market, supply and organisational innovations.[54] The same probably happened in some other services. These industries were not static traditional sector industries at the moment of industrialisation. They often had already experienced rapid growth and development, driven by the increasing importance of market transactions, because of the abolishment of rules and regulations that limited the extent of the market. Industrialisation simply happened when further returns to process innovations decreased.

[51] The term industrialisation of services has been coined before, for example by Levitt (1976, 1983), although in a slightly different context. See also Bakker (2001b); Broadberry (2006).
[52] The price elasticity of demand was substantially above one.
[53] See Bakker (2007c).
[54] The author has benefited from Dormois (1998) to develop these ideas.

Some services may have reached a Malthusian productivity ceiling that caused bottlenecks to emerge. For transport, for example, Robert Fogel suggests that rising demand resulted in the development of several alternative technologies in the 1830s and 1840s, possibly to make up for decreasing returns to turnpikes and canals.[55] When railways took off, research on cars and diesel technology was shelved, only to be resurrected in the 1890s, when investments in railways probably reached decreasing returns and the distance from the farm to the station became the new bottleneck.

Other service industries were sometimes also industrialised by product innovations, such as medicines in healthcare and software packages in office work. Like films, these also had characteristics of process innovations in that they fundamentally changed certain processes and super-inflated their outputs. They had characteristics of organisational innovations because they needed new types of organisations to develop and make them. They had characteristics of market innovations because their lower prices often sharply expanded the markets, reaching many buyers that had not bought the service before. They also had characteristics of supply innovations, because the products often were intermediate inputs to existing organisations.

The industrialisation process

The industrialisation process itself is subdivided here in three elements: the process in a narrow, more technological sense, consisting of automation, standardisation and tradeability; the flow of labour from the traditional to the modern sector; and industrialisation as a social process.

Automation, standardisation and tradeability Automation involved the division of the production process into separate routines, to which 'high-technology capital' was added to decrease the quantity of labour and old capital inputs needed by automating them away. We have seen this at work in motion pictures, where old labour and capital were replaced by new craftsmen, star professionals and projection machines. Other services probably also experienced some degree of automation.

In healthcare, for example, the labour and routines of the doctors, nurses, supporting staff, but also hospital capacity and medical equipment, were at least partially replaced by medicines, resulting in lower costs and fewer patient-days in hospital per treatment. In communications, the workers transporting the mail, the postmen sorting and

[55] Fogel (1964).

delivering it, and the capital invested in transport vehicles and sorting centres was partially replaced by optical and electronic telegraphs, telephone calls, faxes and emails, sharply reducing the cost per standard message.[56] In domestic services the labour of household members and domestic servants and old capital such as preservation jars, washing boards, washing buckets or brooms were at least partially replaced by appliances such as the fridge, vacuum cleaner and washing machine, resulting in far fewer labour hours per domestic routine, and lower costs than if supplied through the market by domestic servants. In office work, the labour of typists, clerks, secretaries, human calculators, and capital such as paper, desks, storage space and the real estate taken up by these persons were at least partially replaced by software such as word processors, spreadsheets, databases or planning software, which sharply reduced the cost per office routine.[57]

Standardisation involved standardising most quality aspects of a service, guaranteeing that they were the same for every consumer. In entertainment, we saw how motion pictures did away with understudies, bad nights and second-rate provincial sets and casts, guaranteeing that a film title delivered the same product wherever it was seen.[58] Similarly, in healthcare medicines standardised the patient experience, since they received similar treatment and since the manufacturer developed instructions as to what to do in each case, so becoming a disseminating database of experience. In communications, the telegraph and telephone standardised the way local personnel could influence the delivery, the speed of messages, their format, and also standardised the time it took sender and recipient to originate the message. In domestic services, appliances decreased the variability in performance by domestic servants or household members and also standardised household routines themselves.[59] In the office, software decreased the variability in office workers' performance and in office routines by providing widely used formats for many routines through databases, spreadsheets, word processors and the like.

Industrialisation also made entertainment tradeable. Traditional services were location-bound and trading was inherently impossible. Only some inputs, such as the service personnel themselves, could travel. In industrialised services tradeable capital components now substituted for

[56] In the nineteenth century in large cities mail was sometimes delivered as many as six times a day.

[57] On an earlier wave of office automation see Broadberry and Ghosal (2002).

[58] The standardisation was a matter of degree, as the ambiance of cinemas and the time and date shown could still vary and location varied per definition. Radio and television further removed a lot of this remaining variability.

[59] But they did vary a lot between countries. See, for example, Baden-Fuller (1980).

much of that labour.[60] Motion pictures, for example, were traded capital goods, giant machines used by cinemas to produce spectator-hours. In healthcare, traded medicines were used by doctors to provide treatments. In communications, tradeable transmission capacity was used by providers to produce messages.[61] In domestic services, appliances were tradeable capital goods used to produce domestic services such as cleaning, washing or the preservation of food.[62]

The flow of labour The industrialisation of entertainment – and perhaps of that of services in general – was more relative than absolute. The price decrease and the quality increase triggered a jump in demand. As we saw in Part I, live entertainment survived by dynamically differentiating itself, becoming either high value-added or heavily subsidised, but it became less and less important as a percentage of output and of sectoral inputs.[63] The talkies in particular caused a pronounced and very visible unemployment among musicians.[64]

The industrialisation came almost as a thief in the night because it was smoothed by a sharp overall growth in demand and employment (table 11.6), and probably also because it happened though product innovations. At first, the modern sector was in a new part of the market and therefore, at least initially, not considered a threat to the interests of the old, traditional industry as it had been in the textile industry.[65]

This relative industrialisation by stealth possibly also happened in other services. In the pharmaceutical industry, a lot of labour in nursing and doctoring was replaced by medicines, but at the same time employment grew as income elasticity was high. In office automation, office workers were replaced by machines, without much protest.

Industrialisation in these services went largely unopposed. The new quality made protest difficult: who was going to protest against cinema, against new medicines, against the telegraph, against domestic appliances? Unemployment of service workers may have been less noticed

[60] Without slavery, trading in persons was hardly a possibility.

[61] We would argue that transmission capacity or bandwidth could be traded: it could be bought and sold, and in principle be resold by buyers.

[62] Oulton (2001) discusses how the intermediate-good aspect of services can affect productivity.

[63] The current low cross-price elasticity of motion pictures and entertainment is a consequence of industrialisation, not a refutation.

[64] Kraft (1996).

[65] That initially motion pictures were aimed at a different market but increased in quality and eventually strongly competed with pre-existing entertainment may not be unlike the experience of 'disruptive innovations' identified by Christensen (1997).

Table 11.6 *Indicators of sectoral shift in the entertainment industry, US, Britain and France, 1900–1938*

		US	UK	FR
Employment in modern sector (%)	1900	3.0	2.4	3.6
	1938	87.0	60.0	24.2
New jobs 1900–1938 (fte)	traditional	−48,771	−22,053	11,259
	modern	175,667	62,520	14,868
	net	126,896	40,467	26,127
Modern capital/whole capital stock (%)	1938	87.4	80.6	82.3
Modern output/all output (%)	1938	97.8	75.0	89.8
Modern expenditure/all expenditure (%)	1938	92.0	67.0	68.0
Price per spectator-hour (% change per annum)	1900–1938	−4.6	−0.4	−4.3

Note: fte = full-time employment equivalent. Output is measured in spectator-hours.
Source: Bakker (2004a), with corrections.

than that of industrial workers, because they often were less well organised.

Industrialisation as a social process A sceptic might say that the above offers very much an economic perspective, while from a Marxist or Weberian point of view industrialisation is in the first instance a social process. Thus factories were distinguished by their social relations: the labour of a workforce controlled by a capitalist employer and concentrated in a single building superseded that of independent artisans. They need not, initially, have been more technologically advanced or capital intensive than the system they replaced, and rapid technological change was the consequence, not the cause, of industrialisation.[66]

This may have held for manufacturing industries, where identical products were made in long series and costs were reduced first by a different organisation of production, and then by continuous process innovations, such as the water frame or steam engine. In entertainment, however, and possibly in other industrialised services as well, it was the product innovations that became important. The period of process innovations that preceded these radical new products may just as well

[66] The author is indebted to a discussion with Sean McCartney. See also Mokyr (2002: 119–62) who discusses four different explanations for the factory system: fixed costs and scale economies, information costs and incentives, labour effort, and the division of knowledge.

resemble the Marxian–Weberian aspects. Theatres probably shared quite a number of the above social characteristics with factories, and the same can be said for hospitals, national postal systems or office administration. If so, then the predecessors of the industrialised high-sunk-costs services were already industrialised, sometimes even before the Industrial Revolution, and consequently the subsequent industrialisation of these services was a second degree of industrialisation. Rather than being latecomers, these services then would be the earliest examples of industrialisation in social terms. Unseen, unnoticed, like a thief in the night, long before steam industrialised textiles.

The shift to high sunk costs

According to Schumpeter (1976) the 'fixedness' of costs is a matter of degree and depends on the interval studied. Although Schumpeter does not discuss sunk costs, their sunkness may also have been a matter of degree, even if to a lesser extent. The residual value may not always be exactly zero and some sunk costs were incurred regularly. Advertising expenditure, for example, was generally incurred periodically, and likewise, films were made continuously in portfolios.

During industrialisation, entertainment shifted to high sunk costs.[67] The same may have happened in other industrialised services. Product innovations require large, one-off up-front outlays, both to develop the technology itself – such as cinema or techniques to derive medicines from dye stuffs – and to continuously make new varieties – individual films or medicines. Some service industries pioneered organisational innovations that institutionalised the innovation process itself. Lamoreaux and Sokoloff (1999) show how the emergence of large R&D labs between 1900 and 1950 involved experimenting with organisational structures, incentives and routines to enable innovations to be made inside the lab.

Compared to this increase in sunk costs, the variable and marginal costs were relatively low. Making a film cost a lot, while delivering another spectator-hour cost close to nothing. Likewise, discovering and developing a medicine cost a lot, but manufacturing another pill cost hardly anything. Building a telephone network was costly, but selling another call cost nearly nothing.

Increasing sunk costs had several financial and economic consequences. First, the access to long-run free cash-flow became important, since often large cash outlays had to be carried for a long time before any

[67] See Chapters 6 and 7.

product was sold. Within film production, this period was initially small, but over time increased to a few months, a season, a year and even longer. Within telecommunications, it could be at least a few years. Within medicines it could be several years, sometimes as much as ten to fifteen. Every additional year at the end disproportionately affected the rate of return on all outlays. At the social level only highly developed economies could afford to take resources out of direct production for so long.

Sunk costs often were not investments but outlays that were written off in the year they were incurred. Banks would be hesitant to lend money for R&D projects, as there was little collateral to speak of and no certainty of success. Motion picture production firms obtained this money from venture capitalists, entrepreneurial families, mortgaged cinemas and cash flows from manufacturing operations. Early pharmaceutical firms largely got the money out of the free cash-flow of larger chemical parent companies.

A second implication was that marginal revenue generated by sunk outlays largely equalled marginal gross profits, i.e. profits before sunk costs were amortised or interest payments had been made. In theory, a firm would keep spending on marketing until marginal marketing costs equalled marginal revenues. It also affected the vertical industry structure: producers had to make sure that they, and not the retailer or the distributor, received the marginal revenues caused by their additional sunk expenditures. Solutions were vertical integration or percentage contracts. Patents and copyrights at least partially helped protect the sunk expenditures and were instrumental in controlling downstream activities, such as distribution. They also enabled the enforcement of percentage contracts.

Because marginal costs were minimal, firms used price discrimination to serve those with a low willingness to pay. In cinema, for example, before television there was a complicated system of runs, and after television, several windows on TV. For medicines, prices generally varied per country, and national health systems often varied the costs to consumers, depending on the ability to pay. Telecommunications systems used many different devices, such as peak and off-peak hours, distance of the call or subscription vs. call rates.

A third consequence of sunk costs was their effect on competition. The sunk nature of the investments in effect resembles sunk 'capacity' commitments. In this context, it did not concern production/manufacturing capacity, but rather the capacity to do R&D and develop a certain product. Thus, investing a large amount of sunk expenditures into a new investment project may, in the first instance, make clear that a firm could

charge at marginal cost (i.e. close to zero) if a competitor were to arrive in the same field and, in addition, it demonstrated that for the firm's investment decisions the sunk expenditures no longer mattered so it might even substantially add to the sunk expenditures it has already made when a competitor entered the field. Table 11.7 gives a rough indication of the importance of sunk outlays on advertising and R&D in various industries during the second half of the twentieth century.

In the film industry, for example, just a few producers–distributors eventually came to dominate the industry. Potential entrants knew that if they wanted to enter seriously, they would have to incur investments to make an entire portfolio of feature films, enter into large contractual commitments with cinemas, build a large studio complex, a distribution system, and that even while they were making these investments, the existing Hollywood producers–distributors could offer their films at more advantageous conditions to cinemas and add to their existing sunk expenditures on their film portfolio to increase the quality.

Entrants into profitable industries often underestimated these issues, and sometimes triggered an escalation of sunk outlays. While they were prepared to match existing sunk outlays they were often unprepared for further escalation.[68] It was far less risky to enter by acquiring an existing firm, or, if acquisition was difficult, simply to make a financial portfolio investment in firms.

The dominance of quasi-unique organisations

In the motion picture industry, a few quasi-unique organisations eventually came to dominate the industry. They held large market shares, so that their actions could have a significant impact on the entire industry. They are called quasi-unique, because they were more than one firm, but differed significantly from most other (smaller) firms in the industry, and often also from each other in some respects. Of the big five Hollywood studios, for example, four had a different geographic monopoly while the fifth, MGM, dominated the entertainment centres of big cities across the US. They were also organised in somewhat different ways and together differed from the three small studios, which generally did not own cinemas and did not always do their own foreign distribution. While a fringe of small firms remained, they decreased in importance.

One can speculate about the role of quasi-unique organisations in other industrialised services. In healthcare, the emerging pharmaceutical firms were certainly large and unique to some extent. In communications the

[68] Sutton (1998).

Table 11.7 *Advertising or R&D-outlays as percentage of sales by industry, 1960–1990*

Advertising	Percentage	Research and Development	Percentage
Entertainment	5.0	Entertainment	25.0
Industrial/other chemicals	3.7	Software	20.0
Pharmaceuticals	3.7	Office machines and computers	11.7
Food and kindred products	2.3		
Electronic machinery	1.6	Pharmaceuticals	8.2
Rubber products	1.5	Electronic machinery	5.3
Engines	1.0	Industrial/other chemicals	4.3
Office machines and computers	1.0	Aerospace	3.8
		Motor vehicles	3.2
Software	1.0	Rubber products	2.2
Motor vehicles	0.8	Engines	2.1
Paper and allied products	0.7	Petroleum	0.9
Petroleum	0.5	Paper and allied products	0.8
Aerospace	0.3	Food and kindred products	0.7
Ferrous metals	0.3	Ferrous metals	0.7

Source: adapted from Helms (1996: 254–5).

same could be said for the new telegraph and telephone companies. In domestic services, servants and household members were partially replaced and made more productive by large firms with large factories and R&D labs that turned out household appliances. In office administration office clerks and business services were automated away by large firms developing new office software.

As has been discussed in Chapter 6, quality races in which sunk outlays were escalated are an important explanation for how a handful of firms came to dominate these industries, rather than a fragmented configuration of companies.

Since there were so few organisations, they could not always borrow from standard management practice. They often had to invent new ways to manage their many intangible assets, their enormous sunk commitments and decisions on future ones. They also needed to deal with their suddenly emerging market power because of their growing market share: their actions increasingly had a direct effect on the whole industry.

The importance of quasi-unique firms makes it difficult to speak of typical or representative firms. One cannot just take a random sample from the total number of firms. Evolutionary theories of the firm would imply that these organisations somehow had superior characteristics which made them survive and grow large. Since they sometimes also

bought less successful organisations or their personnel, they also accumulated a large amount of routines and of knowledge.

International diffusion of the innovation

A key characteristic of motion pictures was their rapid diffusion around the world. The same happened with innovations in other industrialised services. Two factors were probably important for this. First of all, high sunk costs made marginal revenues equal marginal profits. The innovator companies would make every effort to sell as widely as possible, and could price-discriminate between countries according to their willingness to pay. One thinks, for example, of film rental or medicine prices.[69] Second, often the services were intermediate goods used as capital goods inside the national markets. Therefore entrepreneurs in a country would generally be willing to exploit an innovation, as they would not want to forego a clear profit opportunity.

External causal factors

Several factors enabled the industrialisation of entertainment. The first was demand. As we have seen in Part I, growing disposable income and leisure time as well as population growth sharply increased demand for entertainment, while urbanisation and new transport networks focused this demand spatially. Broader and unquantifiable factors such as secularisation and the homogenisation of preferences effected by the rise of the nation state may also have made aggregate demand more responsive to quality increases.[70] Both sets of causes probably also affected the rise of other high sunk-costs industries. The rise of the modern pharmaceutical industry, for example, was preceded by a pronounced and sustained increase in real consumer expenditure from the mid-nineteenth century onwards.[71]

A second factor, the effectiveness of sunk outlays, could be influenced by the way R&D was organised. Film production made quality increases 'cheaper'. In R&D in general, specialisation between individual inventors and corporate R&D labs, new discoveries, the fall in costs of R&D inputs, and knowledge itself could affect effectiveness.[72] Once the method of synthesising medicines from coal tar was available, for

[69] This possibly made industrialised services attractive. The traded capital good circumvented protection in many cases, as the services it generated inside a country escaped tariffs. Remittance of profits, however, was difficult sometimes.
[70] See Chapter 3. [71] Bakker (2007c).
[72] See, for example, Lamoreaux and Sokoloff (1999: 19–57).

example, the schedule of sunk outlays to quality changes became less steep. Wider changes in society, such as an increase in human capital, and in research by universities, governments, and other non-profit institutions, may also have decreased the sunk outlays needed. Within advertising, important innovations that led to increasing effectiveness were the emergence of daily newspapers, the yellow press, national weekly magazines, cinema, radio, television and the internet. Functional quality and perceived quality often coalesced in the design of products where it was not always easy to distinguish between the two.

A third factor was liberalisation. Regulation could prevent the growth of an industry and make it too risky to incur large sunk investments, especially if they would be illegal. Likewise, deregulation of television in Europe led to a large boom in the television market, and a sharp increase in sunk outlays that limited the number of suppliers as the market grew rapidly.[73]

A fourth factor was market integration. This also connected previously isolated assets and in the long run could equalise their rate of return. More exogenous was probably the integration caused by the above-mentioned deregulation of spectator entertainment. This may also be important in other high-sunk-costs industries. In telecommunications, for example, the market for switching equipment was fragmented into national markets until the early 1980s, after which more and more national carriers used international tenders. A few smart agents, especially Northern Telecom from Canada, incurred massive sunk costs in developing digital switching technology, which seemed irrational given the small fragmented national markets. However, in the face of an integrating international market, Northern Telecom was able to rapidly increase its market share and make huge profits from its bet.[74]

In the case of endogenous market integration, technological change may set in motion a self-reinforcing process, by which additional investments in the technology improving integration are made because of the benefits of earlier investments. The sunk costs of the additional integrative innovations could now be amortised over a larger market, and subsequently would increase that market, after which the sunk costs of another additional integrative innovation could be amortised over an even larger market, and so on. This could be the result of new technologies that reduced transport costs – such as the railway – or made goods more tradeable – such as refrigeration, medicines or films. Motion pictures, for example, increased the effective market by integration, and the larger market led to higher sunk costs, increasing the share of

[73] Motta and Polo (2003). [74] Sutton (1998).

pictures and integrating the market even further. Nevertheless, sometimes product innovations that integrated markets by making services tradeable did so in a bang rather than several small steps; one thinks, for example, of penicillin.

A fifth factor was the ability to capture the rents generated by sunk outlays. As we saw in Part II, motion picture firms could only make a quality jump if they were sure they would get most of the marginal revenues this generated, through, for example, intellectual property rights, vertical integration or enforceable percentage-contracts. A large market share could also protect rents.[75]

Conclusion

The case of spectator entertainment suggests that there is nothing inevitable in the long-term slow or even nil growth of productivity predicted by some for certain service industries such as entertainment. Instead services could be industrialised and subjected to continual technological improvement.[76] Cinema was part of the general surge in TFP-growth during the early twentieth century. It accounted, for example, for as much as 2 per cent of US real GDP-growth and 3 per cent of intensive growth. By 1938, social savings amounted to 2.3 per cent of GDP. Prices fell sharply and firms were hardly able to capture Schumpeterian rents from innovation in the form of increasing markups.

The intensive growth was primarily caused by an industrialisation process that automated, standardised and made tradeable live entertainment. First, the cheaper, lower value-added entertainment was automated away by silent films, then the high value-added metropolitan entertainment by talking pictures. The phenomenal twenty-eightfold US output growth, for example, (from three to fifty-four spectator-hours per capita) was masked by a sharp fall in prices (from 61 to 10 real cents per spectator-hour) that made real expenditure only increase fivefold (from 2 to 5.6 real dollars per capita).[77] The industrialisation and its effects went therefore largely unnoticed.

The findings also shed light on the notion – sometimes called 'Baumol's disease' – that, over time, an increasing part of national income is spent

[75] Legal monopolies granted by the government could also be a solution, although there would be no dynamic incentives.

[76] See also the overview of the development of UK services by Lee (1994) who concludes that poor productivity performance of services at some point in time 'was not an eternal constant, to be built into grim forecasts of the end of growth'.

[77] Per capita, quantity and expenditure still increased eighteenfold and threefold, respectively.

on certain services, such as healthcare or the arts, because the prices of manufactured goods relative to services drop steadily.[78] While in manufacturing considerable productivity increases can be reached that lower costs, similar increases in service industries are hardly possible, because of their very nature.

Four findings of this chapter, however, put this into doubt.[79] First, services did not fundamentally differ from manufacturing; just as in manufacturing, some aspects could be automated easily, others with more difficulty, but no essential difference has been proven to exist. Second, the observation of static productivity in services depends on industry and market definition. It occurs only if the medium is used to categorise the message: grouping all entertainment with low productivity under the banner 'arts' and all with high productivity under 'entertainment'. This will depend mainly on the technology by which it is provided and tends to a tautology.

The idea of stagnant services represents the consequences of the industrialisation of entertainment by cinema more than it represents an underlying situation. In the early days, before cinema and other mass-media industries, it was certainly not true that most live entertainment consisted of plays by Shakespeare, Ibsen or some hip avant-garde playwrights. Today, a situation somewhat close to that exists, as most other – popular – live entertainment has been automated away, and most live entertainment that has survived has only done so by obtaining subsidies, justified by not performing 'commercial' fare.[80] Sometimes, measurement of productivity growth seems to be biased to productivity gains achieved by process innovations and does not take into account productivity gains by product innovations.[81]

Third, the observation of stagnant productivity depends on what kind of measure of production is used. Often, inputs or revenue figures are used as proxies for output in service industries, which cannot capture certain productivity increases. Measures such as the passenger-mile or the spectator-hour may reflect output more accurately.

Fourth, if productivity in certain service industries could not be increased, one would expect similar levels of productivity and productivity

[78] Baumol and Bowen (1966).

[79] Whether or not Baumol's disease exists has been extensively debated in the *Journal of Cultural Economics*. See, for example, Garnham (1985), De Boer (1985), Cowen (1996).

[80] Whether a work is created from a profit motive does not determine whether it is art. Cowen (1998) quotes numerous examples and includes several case studies of some of the greatest artists of Western civilisation who did not shy away from commercial exploitation.

[81] Dormois (1998: 288), for example, argues that each product innovation is the result of the impossibility of introducing a process innovation.

growth in those industries across nations. Instead, this chapter has shown considerable differences in entertainment productivity growth between countries. This suggests that service industries did not fundamentally differ from manufacturing in that they had some fixed and absolute productivity ceiling, but that productivity in services was just as sensitive to market forces and factor endowments. If market conditions necessitated it, productivity in the entertainment industry could also increase, and productivity-increasing innovations would also take place.[82]

This chapter has also attempted to state qualitatively the main characteristics of the industrialisation of entertainment, and to explore speculatively to what extent they could be a foreshadowing of the industrialisation of certain services that also experienced a shift towards high sunk costs.

The productivity increases brought about by the emergence of high-sunk-costs industries often came as a thief in the night. Because they involved product innovations and new industries, they did not always directly and observably threaten existing industries, but sometimes simply marginalised them by superior growth. Often substantial 'pre-industrial' productivity advances had already been achieved by process innovations and high-sunk-costs industries only contributed the last few miles of productivity growth that could not be done by further process innovations. Nevertheless, these last few miles were large compared to the productivity levels immediately before the adoption of the product innovation.

The industrialisation process is still going on. Other services may exist that have experienced similar productivity growth, the observation of which might also be obscured by inadequate output measurement and industry/market definition. One thinks, for example, of the effect of household appliances on domestic servants,[83] of pharmaceuticals on patient-days in hospital or quality-adjusted years of life and of telecommunications on postal and messenger services.[84] Contrary to the textile industry, in many of these services industrialisation came almost unnoticed. Exceptional output growth was accompanied by sharply falling prices that limited expenditure shares, by rapid industry growth that made the decline in traditional employment more relative than absolute, and by a shift to product innovations that obscured industry/

[82] Broadberry and Ghosal (2002) even mention how the Taylor-system was applied to office work, and how management specialists in the 1920s allotted time for an activity such as cutting a piece of paper with scissors: four seconds for the first snip, two for each subsequent one.

[83] Bowden and Offer (1994). [84] Bakker (2005b).

market definition. Measuring productivity only in the traditional sectors of these industries often shows a productivity slowdown, but this approach is like using the output of the independent village tailor to claim that productivity growth in the textile industry has been stagnating since 1750. Spectator entertainment is the prime example of a group of industrialised services that together have sharply increased the quality of life and changed the way we live. The happenings of the early motion picture industry therefore may give insight into the shape of technological change in many service industries to come.

12 Epilogue: after television

This book has investigated three main themes: how motion pictures industrialised spectator entertainment, how a quality race changed the structure of the international entertainment market, and what effect this had on economic and productivity growth. The investigation has resulted in seven claims. First, cinema industrialised live entertainment by automating it, standardising it and making it tradeable. Second, this industrialisation process was largely demand-led. Third, it was the index case for the subsequent industrialisation of other services. Fourth, in a process of dynamic product differentiation old formats reinvented themselves when new formats arrived: theatre changed after vaudeville, vaudeville changed after cinema and motion pictures changed after television. Fifth, tradeability integrated national entertainment markets into an international one. Sixth, a quality race in which firms escalated their costs sunk in film production and marketing, triggered in the 1910s, led to the emergence of feature films as we know them now. It is still going on today. The race resulted in a handful of American companies dominating the entertainment business, as well as in the industry's geographical concentration in the US, later southern California. Last but not least, although the Hollywood studios have won the race, American consumers probably lost it. Their European counterparts enjoyed a far greater variety of both live and filmed entertainment, and consumed lots of exotic pictures next to the standard Hollywood fare.

These claims are intertwined with several other noteworthy findings. First, rapid growth in the live entertainment business preceded the emergence of cinema. Second, around the turn of the century, elasticity of demand at prices lower than the lowest existing ones was increasing sharply, and this was initially not well known; it was waiting to be discovered by entrepreneurs. Third, eventually the process of discovering audience tastes was industrialised itself by way of modern market research techniques applied to motion pictures by George Gallup and others. Fourth, motion pictures were an 'inferior' good in Europe (people spent proportionally less on them as their income increased) but a 'superior' good in the United States, and live entertainment was

slightly superior in Europe and very superior in the US. European consumers spent more of their income on entertainment and considered it far more a basic necessity than their American counterparts. These transatlantic differences in consumption could be explained largely by diverging tastes, while intra-European differences were caused more by variations in relative prices. Fifth, because of the threshold ticket-selling capacity needed, some films could not be sold to cinemas at any (positive) price, which complicated the competitive process and new entry. Finally, Hollywood did not have a manifest destiny as the centre of world film production. Until the mid-1910s European firms were superior, and until the late 1920s locations such as New Jersey and Florida were competing with Hollywood as the main film production site. The 'iron law of Hollywood dominance' postulated by some is no more than a folk tale.

This investigation has ended at the eve of the Second World War because the industrialisation had been completed by the 1930s, once all cinemas had switched to talking pictures. One may wonder how the findings of this study are relevant for and stand up to the eventful and rapid development of the motion picture industry after 1940. That is the subject of this epilogue.

After the Second World War, the Hollywood film industry disintegrated: production, distribution and exhibition became separate activities that were not always owned by the same organisation. Three main causes brought about this vertical disintegration. First, the US Supreme Court forced the studios to divest their cinema chains in 1948. Second, changes in the social-demographic structure in the US brought about a shift towards entertainment within the home: many young couples started to live in the new suburbs and wanted to stay home for entertainment. Initially, they mainly used radio for this purpose and later they switched to television.[1] Third, television broadcasting in itself (without the social-demographic changes that increased demand for it) constituted a new distribution channel for audiovisual entertainment and thus reduced the scarcity of distribution capacity. This meant that television took over the focus of the lowest common denominator from radio and cinema, while the latter two differentiated their output and started to focus more on specific market segments.

The consequence was a sharp fall in real box office revenue in the decade after the war (figure 12.1). After the mid-1950s, real revenue stabilised, and remained the same, with some fluctuations, until the mid-1990s. The decline in number of screens was more limited. After

[1] Gomery (1985: 5–11).

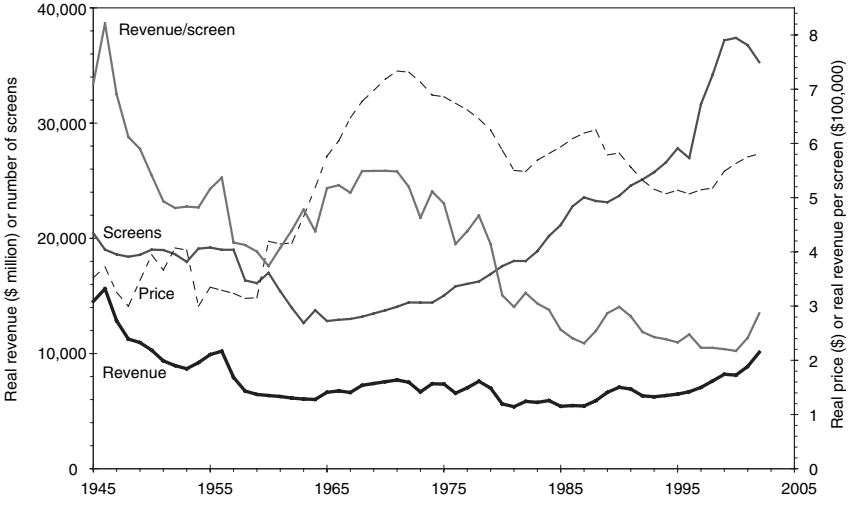

Figure 12.1 Real cinema box office revenue, real ticket price and number of screens in the US, 1945–2002

Note: The values are in dollars of 2002, using the EH.Net consumer price deflator.

Source: Adapted from Vogel (2004) and Robertson (2001).

1963 the number of screens increased again steadily to reach nearly twice the 1945 level in the 1990s. Since then there have been more movie screens in the US than ever before. The proliferation of screens, coinciding with declining capacity per screen, facilitated market segmentation. Revenue per screen nearly halved in the decade after the war, then made a rebound during the 1960s, to start a long and steady decline from 1970 onwards. The real price of a cinema ticket was quite stable until 1960, after which it more than doubled. Since the early 1970s, the price has been declining again and nowadays the real admission price is about what it was in 1965.

It was in this adverse post-war climate that the vertical disintegration unfolded. It took place at three levels. First, the Hollywood studios divested their cinema chains. Second, they outsourced part of their film production and most of their production factors to independent companies. This meant that the Hollywood studios only produced part of the films they distributed themselves, that they changed the long-term, seven-year contracts with star actors for per-film contracts and that they sold off part of their studio facilities to rent them back for individual films. Third, the Hollywood studios' main business became film distribution and financing. They specialised in planning and assembling a

portfolio of films, contracting and financing most of them and marketing and distributing them world wide.

These developments had three important effects. First, production by a few large companies was replaced by production by many small flexibly specialised companies. Southern California became an industrial district for the film industry and harboured an intricate network of these businesses, from set design companies and costume makers, to special effects firms and equipment rental outfits.[2] Only at the level of distribution and financing did concentration remain high. Second, films became more differentiated and tailored to specific market segments; they were now aimed at a younger and more affluent audience. Third, the European film market gained in importance: because the social-demographic changes (suburbanisation) and the advent of television happened somewhat later in Europe, the drop in cinema attendance also happened later there. The result was that the Hollywood companies offshored a large chunk – at times over half – of their production to Europe in the 1960s.[3] This was stimulated by lower European production costs, difficulties in repatriating foreign film revenues and by the vertical disintegration in California, which severed the studios' ties with their production units and facilitated outside contracting.

European production companies could better adapt to changes in post-war demand because they were already flexibly specialised. The British film production industry, for example, had been fragmented almost from its emergence in the 1890s. In the late 1930s, distribution became concentrated, mainly through the efforts of J. Arthur Rank, while the production sector, a network of flexibly specialised companies in and around London, boomed. After the war, the drop in admissions followed the US with about a ten-year delay (figure 12.2). The drop in the number of screens experienced the same lag, but was more severe: about two-thirds of British cinema screens disappeared, versus only one-third in the US.

In France, after the First World War, film production had disintegrated rapidly and chaotically into a network of numerous small companies, while a few large firms dominated distribution and production finance. The result was a burgeoning industry, actually one of the fastest-growing French industries in the 1930s.

Several European companies attempted to (re-)enter international film distribution, such as Rank in the 1930s and 1950s, the International

[2] Christopherson and Storper (1987, 1989).

[3] See Guback (1969), which gives a detailed account of American and European film production since 1945. See also Waterman (2005).

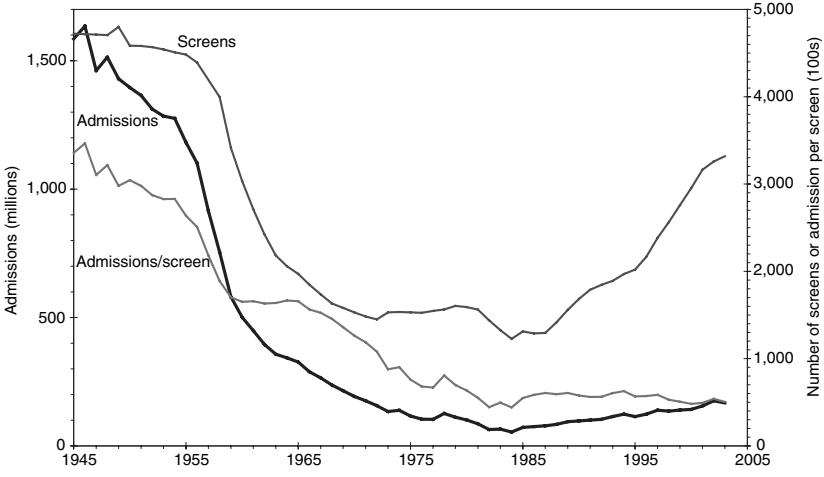

Figure 12.2 Admissions and number of screens in Britain, 1945–2005
Source: Screen Digest/Screen Finance/British Film Institute and Robertson (2001).

Film Finance Corporation in the 1960s, Gaumont in the 1970s, PolyGram in the 1970s and again in the 1990s, Cannon in the 1980s. All of them failed in terms of long-run survival, even if they made profits during some years. The only post-war entry strategy that was successful in terms of survival was the direct acquisition of Hollywood studios.[4] In the 1980s NewsCorp from Australia acquired Twentieth Century Fox and Sony of Japan bought Columbia/Tristar.

From the mid-1970s onwards, the Hollywood studios revived. The slide of box office revenue was brought to a standstill. Revenues were stabilised by the joint effect of seven different factors. First, the blockbuster movie increased cinema attendance. This type of movie was heavily marketed and supported by intensive television advertising. *Jaws* was one of the first and was an enormous success. Second, the US film industry received several kinds of tax breaks from the early 1970s onwards, which were kept in force until the mid-1980s, when Hollywood was in good shape again. Third, coinciding with the blockbuster movie and tax breaks, film budgets increased substantially, resulting in a higher perceived quality and a higher quality difference over television, drawing more consumers into the cinema. Fourth, a rise in multiplex cinemas, cinemas with several screens, increased consumer choice and increased the appeal of cinema by offering more variety within a specific

[4] Bakker (2007d). See also Bakker (2000a).

cinema, thus decreasing the difference with television in this respect. Fifth, one could argue that the process of flexible specialisation of the California film industry was completed in the early 1970s, thus making it ready to adapt more flexibly to changes in the market. MGM's sale of its studio complex in 1970 marked the final ending of an era. Sixth, new income streams from video sales or rentals and cable television increased the revenues a high-quality film could generate. Seventh, European broadcasting deregulation increased the demand for films by television stations substantially.

From the 1990s onwards further growth was driven by newer markets in Eastern Europe and Asia. Film industries from outside the West also grew substantially, such as those of Japan, Hong Kong and India.[5] The European Union started a large-scale subsidy programme for its audiovisual film industry, with mixed economic effects. By 1997, ten years after the start of the programme, a film made in the European Union cost 500,000 euros on average, was 70 to 80 per cent state-financed, and grossed 800,000 euros world-wide, reaching an audience of 150,000 persons. In contrast, the average American film cost 15 million euros, was nearly 100 per cent privately financed, grossed 58 million euros, and reached 10.5 million persons.[6] This seventy-fold difference in performance is remarkable. Even when measured in gross return on investment or gross margin, the US still had a fivefold and twofold lead over Europe, respectively.[7] In few other industries does such a pronounced difference exist.

During the 1990s, the film industry moved into television broadcasting. In Europe, broadcasters often co-funded small-scale boutique film production. In the US, the Hollywood studios started to merge with broadcasters. In the 1950s they had experienced difficulties with obtaining broadcasting licences, because their reputation had been compromised when the Supreme Court found them guilty of anti-competitive behaviour. They therefore had to wait for forty years before they could finally complete what they intended.[8] It was not until the 1990s that Disney, for example, bought the ABC network, Paramount's

[5] By 1990, for example, 948 feature films were produced in India, 272 in Hong Kong and 239 in Japan. Most of the Japanese and Indian films were made for (segments of) the domestic market and were not exportable. In the same year 304 features were produced in the United States, 144 in France and 29 in Britain (Robertson 2001).

[6] Dale (1997).

[7] Gross return on investment, disregarding interest costs and distribution charges, was 60% for European vs. 287% for US films. Gross margin was 37% for European vs. 74% for US films. Costs per viewer were 3.33 euros vs. 1.43 euros, revenues per viewer were 5.30 euros vs. 5.52 euros.

[8] The author is indebted to Douglas Gomery for this point.

owner Viacom bought CBS, and General Electric, owner of NBC, bought Universal. At the same time, the feature film industry was also becoming more connected to other entertainment industries, such as video games, theme parks and musicals. With video game revenues now exceeding films' box office revenues, it seems likely that feature films will simply be the flagship of a large entertainment supply system that will exploit the intellectual property in many different formats and markets.

The question remains to what extent the key issues affecting the entertainment industry in the first half of the twentieth century played a role during the second half. The industrialisation of spectator entertainment was taken a step further with the adoption of television technology. This made entertainment even more tradeable and also automated and standardised it further. While for cinema marginal costs still existed, for television broadcasting they became nearly zero. Different business models were developed to obtain revenues from broadcastings such as, for example, advertising or public funding. The price per spectator-hour declined by another order of magnitude and came close to zero, while the average cost also became very low. One could argue that television took the industrialisation that was started by cinema to its very limit. Nevertheless, fixed distribution costs remained substantial. In a final stage, the internet sharply reduced these, making it easier and far cheaper for firms to distribute media content, and making it even more tradeable.

The second issue discussed in this book, the evolution of entertainment consumption, was shaped by these massive productivity increases. While entertainment and recreation expenditure as percentage of GDP rose sharply during the first half of the century, since the 1930s it has not increased significantly, contrary to the prediction of some economists. The main reason for this is not any stagnation of output growth, but a massive drop in prices that made possible a sharp increase in the quantity consumed. The savings enabled by lower-priced entertainment were spent on higher-priced new entertainment products, such as VCR-cassettes or video games.

At the same time, the process of dynamic product differentiation identified in Chapter 2 continued after 1945. Ever newer categories of entertainment appeared and older forms had to differentiate themselves to survive. When television arrived, cinemas focused on narrower and more affluent market segments. The advent of cable television enabled the same in television, in which cable channels offer products aimed at smaller segments with a higher willingness to pay for the particular product, while free-to-air channels focus more on the lowest common denominator to maximise the number of viewers with a demographic

profile attractive to advertisers. Likewise, in many countries, public television is expected to differentiate itself from commercial broadcasters, and in response the latter may differentiate themselves even further away from their public counterparts.

A third factor identified in this book, the quality race between film producers that started in the 1910s, appears to have flared up at times of rapid market growth and in new industries. In the 1970s, for example, the Hollywood studios started a new quality race, resulting in ever higher budgets and again leaving a European film industry, which had been recovering, behind in stagnation. The music industry also experienced a sharp increase in outlays on creative expenditures ('Artists and Repertoire') during the 1970s, leading to sharply increasing concentration in the face of rapid market growth,[9] and the video game industry may well have experienced a quality race in the 1990s.

A fourth factor, the economic–geographic reasons for the emergence and resilience of Hollywood, does not appear to have changed that much. Southern California has remained the centre of the international film industry, even after the vertical disintegration and increased flexible specialisation of the industry. Nevertheless, falling travel costs and time enabled by another major innovation, intercontinental flight, made the location of film production far less centralised. Depending on local factor costs and on national and international tax rules the Hollywood studios shifted a substantial part of their production abroad, to locations such as Australia, Canada, Britain and southern Europe.

A fifth development discussed in this book, the branding of films with inputs such as stars and stories, and modern market research to discover the key differentiating product characteristics, continued after 1945, and at high speed. Merchandising became ever more important for films, especially after the new quality race that started in the 1970s with films such as *Jaws*, and some films became brands in themselves that could massively increase the perceived quality of the products to which they were attached, and thus their price.

A sixth issue, the productivity growth brought about and social savings generated by the film industry in the early twentieth century, was just the beginning of a deep and long-running process of structural change within spectator entertainment. Radio, television in its various forms, VCR and the internet increased social savings and total factor productivity even further, probably by at least an order of magnitude. The significance of cinema in the early twentieth century was that it was the first in a series of structural changes that increased productivity.

[9] Bakker (2006).

A seventh issue, investigated in Chapter 11, is whether the qualitative changes in spectator entertainment could form a model for industrialisation and structural change in other service industries involving high sunk costs. Although research on these industries is outside the scope of this book, it is clear that after 1945 new high-sunk-costs industries automated ever more services. Domestic appliances automated housework and made redundant a whole industry of domestic servants. Computer software automated away large pools of typists, and a host of other activities. Pharmaceuticals massively decreased the number of patient-days in hospital for specific indications, and substantially decreased the potential cost to society for increasing the average quality-adjusted years of life that citizens would live when other process innovations, such as public health and hygiene, reached decreasing returns.

The wider significance of these findings is that other high-sunk-costs product innovations may be identified that industrialised other services. Motion pictures, then, were not only first in a row of media industries that industrialised entertainment, but also the first in a series of international industries that industrialised services. The evolution of the early film industry may thus give insight into technological change and its attendant welfare gains in many service industries to come.

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